January 20, 1936

STEEL

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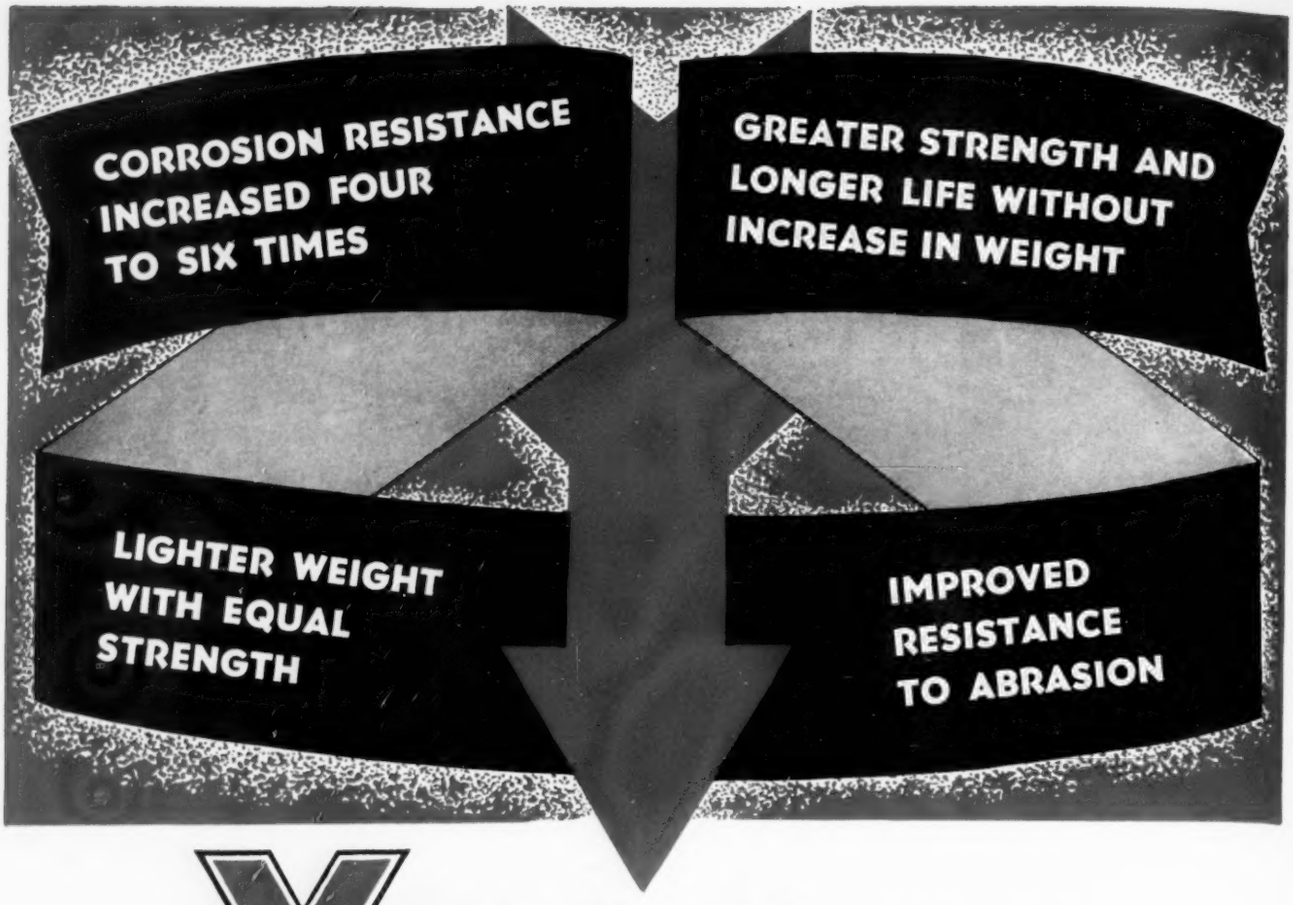
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STEEL

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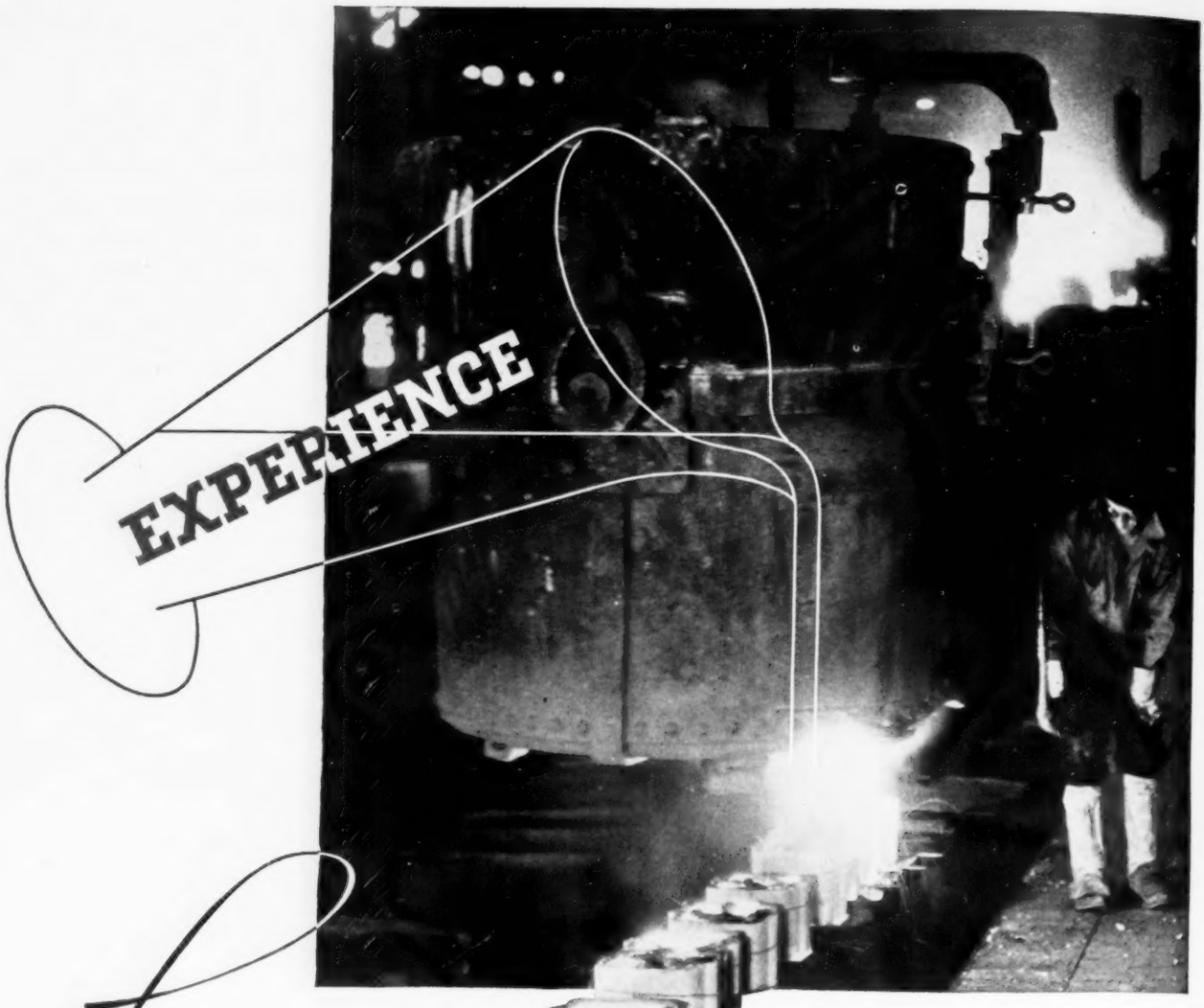

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As the Editor Views the News

A HOPEFUL indication of the substantial character of the present phase of business recovery is the manner in which industrial companies are reconditioning personnel and plant for efficient service. Every day brings important announcements of promotions in executive ranks, of changes in corporate structures, or of improvements in or additions to existing physical properties. Invariably the motive behind this activity is preparedness. Management is getting industry ready to go places. Probably it is making more progress today in reviving morale, effecting needed reorganizations, rehabilitating plant and equipment and generally working toward greater efficiency than at any time in more than a decade.

• • •

It is almost impossible to overstate the importance of competent personnel in the many changes that are taking place. During the acute period of the depression many good executives were deprived of normal opportunities for advancement. Many of the promotions, the announcements of which crowd STEEL's pages (p. 20) weekly, represent belated recognition now made possible by expanding business. In a still broader sense, some of the present activity in redistributing executives is a frantic effort by management to make up for its failure to properly train understudies during the predepression period. Whatever the reason, the infusion of new blood is wholesome and constructive.

New Blood in Industry

• • •

Corporate changes embraced in the week's news reflect the urge of management to adapt its properties to new economic conditions. Bethlehem's changes (p. 12) are the logical answer to the revised schedule of federal taxes. Many observers will agree that its new regulations covering incentive bonuses provide an equitable and intelligent solution of a difficult problem which has vexed many large industrial corporations during a period of many years. The union of Sharon Steel and Pittsburgh Steel, with affiliated companies, when consummated (p. 10) will introduce a new steel empire into the select circle of the industry's 10 largest producers. . . . Business in the first 10 days of January regained almost all of the ground lost during the holiday season. That adjustment having been made, industrial activity (p. 24) now is settling into a pace, which, in the next few weeks, will more clearly define the pattern for 1936.

More Companies Reorganizing

• • •

An unusual illustration of co-operation by five companies to build a complete material handling plant is afforded by the strip mining installation of the Binkley Coal Co. near Terre Haute, Ind. The principal equipment (p. 26) consists of an electrically-operated strip shovel capable of handling 2000 to 3000 cubic yards of earth per hour, four automotive tractor-trailer units each capable of hauling 33 cubic yards of coal, and a 300-ton-per-hour tipple of all-steel construction. The installation is noteworthy, not only because of the design and exceptional size of the equipment, but also because of the painstaking manner in which each unit is integrated into the entire job.

Fit Equipment to Special Job

• • •

In attempting to produce oil well casing of greater strength without increasing its weight, a manufacturer has developed a novel process. Casing is placed in a special press and compressed so that its diameter is reduced and its wall thickness increased to the desired finished dimensions. For instance, a casing originally 7 inches in diameter and 0.362-inch thick is compressed (p. 36) to a diameter of 6.562 inches and a wall thickness of 0.378-inch. In the process, the compression yield point increases from 66,000 to 91,000 pounds per square inch. Persons who are familiar with the exacting requirements of casing—particularly in deep wells—will recognize the significance of this development. . . . A West Virginia company has gone into the business of producing pipe railings of welded assembly (p. 35), thus elevating another welding job to commercial manufacturing.

Stronger Oil Well Casing

E. L. Shaner

Roemer, Hillman Forces Join In Pittsburgh-Sharon Merger

ELECTION of Henry A. Roemer, chairman and president of the Sharon Steel Hoop Co., last week as president of the Pittsburgh Steel Co., and of Mr. Roemer and J. H. Hillman, of Pittsburgh, as directors of the Pittsburgh Steel Co. hints of the formation of a new iron and steel empire.

Hillman is a name which in the Pittsburgh district is associated with coal, coke and many other enterprises. The Hillmans are prominent in the A. M. Byers Co., which operates a new plant at Ambridge, Pa., having an annual capacity of 268,000 tons of iron ingots, 90,000 tons of iron skelp, and 32,000 tons of other finished hot-rolled iron products. At its South Side works in Pittsburgh Byers can manufacture 85,800 tons of wrought pipe annually.

The Hillman name is associated with Spang, Chalfant & Co., having an annual capacity of 225,000 tons of butt and lap weld pipe, and 300,000 tons of seamless tubes at its Standard works in Ambridge and its Spang works in Etna, Pa.

Linked with Valley Plants

Among the interests with which Mr. Roemer and his associates are identified are the Niles Rolling Mill Co., which has rehabilitated the old Falcon sheet mill at Niles, O., and Youngstown Pressed Steel Co., Youngstown, O., which does a general blanking, stamping and fabricating business.

Thus far nothing definite in the situation has developed other than the purchase by Sharon of a substantial stock interest in Pittsburgh Steel and the election of Messrs. Roemer and Hillman to the board of Pittsburgh Steel. No public announcement has been made concerning a merger of these two companies or a possible tie-in of the affiliated Hillman and Roemer properties.

But there is the possibility of the organization of a setup, or a close working affiliation, of various producing and consuming factors which, considered together, would rank tenth in size in iron and steel industry.

On the board, Messrs. Roemer and Hillman succeed Homer D. Williams, retiring president, and Emil Winter.

A special meeting of stockholders of Sharon will be held Jan. 27, for the purpose of voting several refunding operations on the company's preferred stock and bonds, changing the name to the Sharon Steel Co., and more clearly defining the purposes of the company.

In going on the board of Pittsburgh Steel, Mr. Roemer and Mr. Hillman succeed Emil and Dwight Winter, who have resigned. Emil Winter has been first vice president of Pittsburgh Steel since the days of the late Wallace C. Rowe.

In Pittsburgh it is reported that

Henry A. Roemer

Now president of both the Sharon Steel Hoop Co. and the Pittsburgh Steel Co. He has been identified with the iron and steel industry since he was 14, coming up through the American Sheet & Tin Plate Co., Youngstown Sheet & Tube Co., Canton Sheet Steel Co., and Superior Sheet Steel Co. When Continental Steel Corp. was formed in 1927 he became president, going with Sharon in 1933

Sharon has bought about 20,000 shares of Pittsburgh Steel held by the Winters, paying for it about $60 a share. This is said not to be sufficient to carry control. Important blocks of Pittsburgh Steel stock are said to be held by the Beeson, Bindley, and Given interests.

As related here last week, the Sharon company has the following annual capacities: 155,000 tons of pig iron, 450,000 tons of steel ingots, 305,900 tons of finished hot-rolled products.

Pittsburgh Steel has an annual capacity of 375,000 tons of coke, 480,000 tons of pig iron, 720,000 tons of steel ingots, 610,000 tons of finished hot-rolled products.

Sharon's plants are in the Shenango-Mahoning Valley district, while Pittsburgh Steel's plants are in the Pittsburgh district. Speaking broadly, a merger of Sharon-Pittsburgh Steel would bring together assets of about $100,000,000—not including, of course, the affiliated companies previously mentioned.

From a civic standpoint, Pittsburgh is elated over the prospect of a merger of the two companies. The amalgamation of the Carnegie Steel Co. and Illinois Steel Co., both subsidiaries of the United States Steel Corp., as the Carnegie-Illinois Steel Corp. accentuated Pittsburgh's position in the industry, and a Roemer-Hillman union would further enhance it.

In proposing to adopt the name Sharon Steel Co. it is recalled that in the days of the late Frank H. Buhl there was a Sharon Steel Co., which long since has been a part of the United States Steel Corp.

Republic Seeks Fabricator?

While financial news last week dealt with continued negotiations of the Republic Steel Corp., Cleveland, for an unidentified steel producer, but believed to be the Gulf States Steel Co., Birmingham, Ala., it developed that Republic is also negotiating for one of the larger steel fabricating companies in the South.

Republic already has merchant iron capacity in the Birmingham district. Acquisition of Gulf States and the unnamed fabricating company would round out its facilities in the South.

An unconfirmed rumor also merges a southern fabricator with a large one in the North.

Sees Steel for Housing Gaining

IMPORTANT revelations in the low-cost home building field in which steel will play an important role were forecast recently by Bennett Chapple, vice president, American Rolling Mill Co., Middletown, O., and chairman of a committee associated with the Purdue Housing Research Foundation.

Incidentally, Purdue university has started construction of a steel residence in its "test tube village," Lafayette, Ind. The single story, steel-walled house, its partitions and roof so built that cellular units are provided for installation, is to contain a living room, small dining room, kitchen, garage, heater room, three bedrooms and a bath and will cost less than $5000.

"One disturbing factor which has retarded housing for persons in the lower income brackets is the cost

of building houses," said Mr. Chapple.

"How to build a house that the working man could afford to own and live in has been a challenge to architects, building material manufacturers, contractors, and home appliance manufacturers.

"One of the most promising new ideas is the factory-fabricated steel house. Last year was a time of trial and error, of hope and despair, of failure and success, in trying to meet the housing problem. But out of it has come a stronger and more determined group certain to bring important revelations this year."

Steelworks Safer Even than Home

SAFEST place for the 10,000 employes of the Aliquippa, Pa., works of the Jones & Laughlin Steel Corp. in the past 21 months has been in the steelworks—safer even than in their own homes.

In the period April 25, 1934, to date, over 27,000,000 man-hours of work have been completed in this plant without a fatal accident, yet 15 employes lost their lives in accidents in their own homes and other places outside of the plant during the same period.

Of the 15 who lost their lives in activities outside the plant, two men died of accidents in their own homes, one falling down stairs and the other being struck by a flying piece of a grindstone. The other 13 met sudden death in various guises.

Institute Hits Extension of Drawback to Containers

STRENUOUS protest has been lodged with the house ways and means committee in Washington by the American Iron and Steel institute against senate bill 1421 amending the tariff act in connection with drawbacks.

The provisions of the bill, if enacted into law, would alter the long-established principle of former tariff acts by allowing a drawback to apply in cases where "imported containers, packages, coverings, vessels, brands and labels, shall be used in putting up or packing articles manufactured in the United States and so exported."

Walter S. Tower, executive secretary of the Institute, in making the protest calls the committee's attention to the fact that it is obvious "if any such bill were passed by the house (the bill has already passed the senate) and became a law, it would be injurious to the interests of American industries which are manufacturing the various types of containers, as well as materials therefor, and to the workers employed in all such industries.

"Among such industries, the iron and steel industry is one of the most important. Imported containers would take away employment from American workmen, including miners of coal, limestone, and iron ore, furnace men, steel mill workers, those employed in the manufacture of steel drums, tin cans, etc."

Discussing the bill further Mr. Tower says that:

The cost of containers is in most cases only a small part of the selling value of any product as it is exported, and any saving in such cost of containers would therefore be a small, if any, factor as compared with the total cost of the exported article, in influencing its competitive position in export markets.

It does not appear that any such small saving to American exporters would compensate for the damage done to American industries, which might be deprived of manufacturing coverings, vessels and containers for export merchandise.

To illustrate the foregoing representations as to the possible effects of the provisions of Bill S-1421 on the production of containers in this country, an outstanding example may be found in the case of barrels and drums made from steel sheets for shipping petroleum products and various types of containers made from tin plate and terne plate for food and other classes of products.

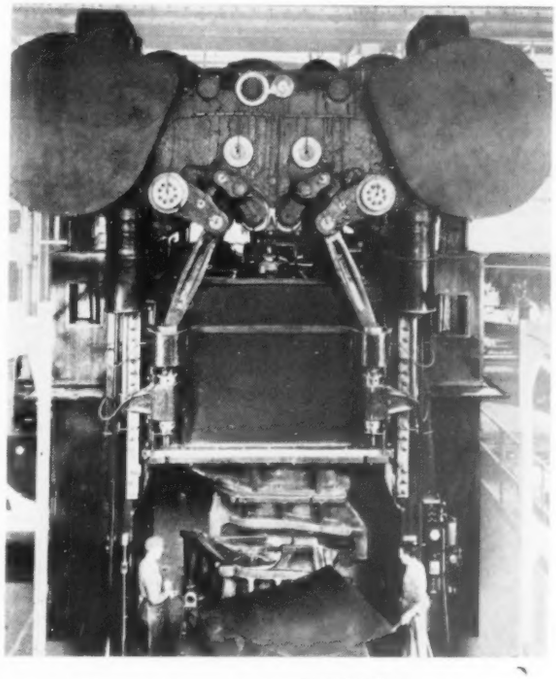
Although official statistics, as published by the United States department of commerce, do not give in detail the exact number of the different types of such containers which are used in shipping American products to foreign markets, reliable estimates indicate that at least 40,000 gross tons of steel sheets are being consumed annually in the manufacture of steel barrels and drums for use in the export of the above-mentioned products, and that there is a probable minimum of 70,000 gross tons of tin plate and terne plate used annually in the manufacture of smaller containers for like purposes.

Some idea of the extent to which American workmen might be affected by opening the door to the use of foreign made containers may be gained by converting the above-named items of steel products into man-hours of labor required in the manufacture thereof. In the *Monthly Labor Review* (May, 1935) of the bureau of labor statistics, United States Department of Labor, are figures showing the average number of man-hours required to produce a gross ton of each of the various classes of steel products when plants are operating at 55 to 60 per cent.

On the basis of those figures, which show 58.19 man-hours required to produce a ton of sheets and 80.63 man-hours to produce a ton of tin plate or terne plate, it is evident that a total of close to 8,000,000 man-hours of work would be required to produce the above-named tonnages of those two classes of products. That figure, moreover, does not take into account any of the labor required in the making or transportation of the containers themselves.

The foregoing example of the possible effects of such legislation as that proposed in Bill S-1421 in respect to certain products of the steel industry is representative of conditions which are a matter of common knowledge. Many products other than those of the iron and steel industry also are similarly involved, either directly or indirectly.

800 Tons—and Out Comes a Body Panel



This huge press, one of three now being installed in the Ford Motor Co.'s Rouge plant, is elephantine in size and even looks a little like an elephant. It is a triple-action electric 800-ton press, shaping the rear quarter panel of the tudor sedan in one operation, which involves three moving slides carrying the dies. Production rate is over four panels per minute. The installed cost of each press is over $90,000—an illustration of the fact that it costs, on an average, $9007.37 to establish a job where a Ford employe may work

Bethlehem Merges Units; Puts Dividends Before Bonuses

INITIAL steps in a subsidiary consolidation program were taken at Newark, N. J., Jan. 16, by directors of the Bethlehem Steel Corp. when they approved a plan of merger to be submitted to a special meeting of stockholders Feb. 26.

Under the plan, the Corporation and four of its subsidiary companies will be merged into a single unit known as the Bethlehem Steel Corp., a Delaware corporation.

The organizations involved are Bethlehem Steel Corp. of Delaware, Kalman Steel Corp., Bethlehem Mines Corp., Bethlehem Steel Corp. of New Jersey and the Union Iron Works Co.

Bethlehem Steel Corp. is a holding company in that its assets consist chiefly of stocks and obligations of subsidiary companies. It does not own or operate any physical properties, and its chief income has always been in the form of dividends received by it from such subsidiary companies.

Avoids Extra Taxes

For years prior to 1934, federal income taxes of a corporation having subsidiaries were based upon consolidated net income, the enterprise being treated as a whole and the subsidiary companies as departments of one business.

During the same period and until the current year dividends received by a parent company from its subsidiaries were not included as taxable income of the parent company, so that the business of an enterprise such as that of Bethlehem could be conducted in whole or in part through subsidiaries without penalty by way of federal taxation.

By amendment to the federal income tax law in 1934 each corporation is required to file a separate income tax return and pay taxes on its separate net taxable income as reported therein, so that the losses, if any, of one subsidiary in a group cannot now be offset against the profits of another subsidiary in the same group, with the result that the aggregate of the income taxes that may be payable by the corporations in the group may be substantially greater than the amount of such taxes that would be payable by them, if they were taxed on the basis of consolidated returns.

Moreover, the federal income tax law has been further amended so that, effective Jan. 1, 1936, it provides that 10 per cent of the dividends received by a corporation from another corporation shall be included as taxable income of the former corporation, with the result that under the law as now in effect the corporation may be required to pay a tax of 15 per cent upon 10 per cent of (or 1½ per cent upon all) the amount of the dividends received by it on and after Jan. 1, 1936, from its subsidiary and affiliated companies.

In view of such changes in the tax laws, Bethlehem directors believe that, in so far as practicable, the physical properties of the subsidiary companies of the corporation should be acquired by it or otherwise consolidated in ownership and that the number of such subsidiary companies should be reduced.

It is the purpose of the directors as promptly as possible after the merger agreement shall have become effective further to consolidate in ownership the properties of other subsidiary companies whereever it shall appear savings in taxes and economies in management may be accomplished.

While considering what should be done in order to decrease the tax burdens the directors have also considered the problems presented by the fact a substantial amount of unpaid dividends have accrued on the 7 per cent cumulative preferred stock of the corporation.

Capitalize Back Dividends

As of Jan. 1, 1936, such accrued and unpaid dividends is $19.25 per share, or a total of $17,977,324.75 on the 933,887 shares of the preferred stock of the corporation now outstanding and not held in its treasury. It is believed such accrued dividends should not be paid out of the present cash resources of the corporation.

At the same time it is recognized that, if such dividends are to be paid only out of future earnings, payment will necessarily be postponed for some time and that no consideration can in the meantime be given to the payment of dividends upon the common stock of the corporation. After consideration, the directors have concluded that it is advisable as part of the merger to capitalize such accrued dividends.

The corporation that will survive the merger will be a Delaware corporation having the name Bethlehem Steel Corp. Upon consummation of the merger the new corporation will become the owner of all the properties owned immediately prior thereto by the constituent corporations.

Unpaid accrued dividends and the additional dividend that will have accrued on April 1, 1936, will aggregate $21 per share.

The merger agreement provides that in carrying out the merger the holders of the 7 per cent preferred stock of the present corporation will be entitled to receive for each share thereof held by them, respectively one share of the 7 per cent preferred stock ($100 par value) and one share of the 5 per cent preferred stock ($20 par value) of the new corporation and $1 in cash, and that the holders of the common stock of the present corporation will be entitled to receive for each share held by them, respectively, one share of the common stock of the new corporation.

New Preferred Only Change

Hence, the shares of stock of the present corporation outstanding at the date hereof and not held in its treasury remaining unchanged, upon the consummation of the merger and the above-mentioned exchange of all the outstanding shares of its stock for shares of the stock of the new corporation, the authorized and outstanding shares of stock of the new corporation of the respective classes will be as follows:

Class	Authorized (Shares)	Outstanding (Shares)
Seven per Cent Cumulative Preferred Stock, of the par value of $100 each	1,000,000	933,887
Five Per Cent Cumulative Preferred Stock, of the par value of $20 each	933,887	933,887
Common Stock, without par value	5,000,000	3,194,314

The certificate of incorporation of the new corporation authorizes a continuance of plans for incentive compensation for officers and employes of the new corporation and its subsidiary companies.

The merger agreement, however, contemplates very substantial changes in the so-called executive bonus system of the present corporation by the substitution of a plan (set forth in Article Tenth of the certificate of incorporation of the new corporation), by which provision is made for special incentive compensation to the executive officers of the new corporation, the heads of departments having general control of matters affecting it and its subsidiary companies as a whole and the other persons, if any, who shall be directors of the new corpo-

ration and at the same time in its employ or in the employ of one or more of its subsidiary companies.

Under the executive bonus system of the present corporation as now in effect the aggregate amount that may be paid as incentive compensation for any year to the officers of the present corporation and heads of departments having general control of matters affecting it and its subsidiaries as a whole is limited to 8 per cent of their consolidated net earnings in such year, after deducting all fixed charges and depreciation (including obsolescence) and depletion and an amount equal to the dividends for such year upon the outstanding preferred stock of the present corporation.

Set Up Incentive Fund

The new plan for special incentive compensation to the executives of the new corporation provides that there shall be established a special incentive compensation fund into which shall be paid for each year an amount equal to 5 per cent of the consolidated net income of the new corporation and its subsidiary companies for such year, after deducting all fixed charges, depreciation (including obsolescence) and depletion, an amount equal to the dividends accrued for such year upon both classes of the outstanding preferred stocks of the new corporation and the amount, if any, to be paid into said fund for such year, and that out of such fund, to the extent that the amount remaining therein shall be sufficient, there shall be paid in each year to the executives of the new corporation an amount equal to one-fifteenth (1/15th) of the aggregate of the cash dividends that shall be paid in such year upon its common stock.

Thus, no special incentive compensation can be paid out of such fund to the executives of the new corporation in any year, unless all the dividends accrued upon its preferred stocks shall have been paid or provided for and cash dividends shall have been paid in such year upon its common stock, and then only to the extent of one-fifteenth (1/15th) of the aggregate amount of such cash dividends.

The apportionments of the amounts that are to be paid out of such fund to the respective executives of the new corporation, as well as the amounts of their respective fixed salaries, are to be determined by the board of directors of the new corporation or by one or more committees thereof, but none of the executives of the new corporation is to have any vote in the determination of the amount that is to be paid to him out of such fund or as a fixed salary.

In view of the fact the Delaware corporation law does not contain any provisions such as those of the New Jersey corporation law pursuant to which the Employes Stock Purchase Plan of the present corporation was adopted in 1929, that plan has not been carried into the certificate of incorporation of the new corporation, and it is not contemplated that such a plan will presently be adopted or authorized by it.

Except as indicated the merger agreement does not contemplate any fundamental change in the plans or policies of the present corporation and its subsidiary companies and it is contemplated that the new corporation will adopt by action of its board of directors, a pension plan, a relief plan and a plan for the establishment and maintenance of a self-insurance fund, which plans (except as may otherwise be necessary or advisable by reason of recent and future legislation) will be substantially the same as those which have been in effect with the present corporation and its subsidiary companies for many years.

Machinery Auction at Newark Reveals Rising Price Trend; Bidding Is Spirited

INCREASINGLY strong trend in the resale machinery market was revealed at the auction sale of the equipment of the J. S. Mundy Hoisting Engine Co., 722 Frelinghuysen avenue, Newark, N. J., Jan. 14.

Despite the fact that much of the equipment was old, bidding was spirited and on several of the more modern machines prices well exceeded expectations.

The auction, which was arranged and conducted by the Herbert Acton Segal Co., 40 Clinton street, Newark, attracted more than 140 prospective buyers, many from distant points, such as North Carolina, West Virginia, Ohio and Michigan.

As usual, the great majority of the bidders were dealers, and these included practically every important resale machinery interest in the New York metropolitan area.

The equipment listed for sale comprised 646 lot items, practically all of which were disposed of. Equipment included tool room, machine shop, pattern shop, blacksmith shop and welding machinery and supplies.

Dealers Get Choice Units

The machine tool to bring possibly the highest bid as a Kearney & Trecker No. 4 double overarm plain miller, said to have been in service about seven years. Bidding started at $1000, but went to $2325 before finally going to Albert Schulman, a dealer of 41 Broadway, Brooklyn, N. Y.

Another machine to attract a high bid was a Gould & Eberhardt No. 36H gear hobber. This brought $1925 and also went to Albert Schulman, who was the succesful bidder on several of the more choice pieces of equipment.

One of the first of the larger items to be disposed of was a Jones & Lamson 2 by 24-inch flat turret lathe, with cutting tools and fixtures. This equipment went for a flat $100 to the Excel Machinery Co., Gastonia, N. C., which company also acquired a Ryerson 18-inch by 6-foot quick change gear screw cutting engine lathe for $135. A LeBlond 20-inch by 14-foot engine lathe of similar type went for $325 and another LeBlond, of same size and type, at $250. An American 24-inch by 18-foot screw cutting engine lathe also was purchased for $250.

A Hendey 16-inch by 18-foot yoke head screw cutting tool room lathe was sold for $400, and a Prentice 18-inch by 8-foot geared head, single pulley drive screw cutting engine lathe for $430, the latter going to a Mr. Meyers, of Baltimore. A Seneca Falls 9-inch by 5-foot screw cutter went for $470, and an Excelsior 14-inch sensitive drill press, with swinging table and chuck, for $85.

No Lack of Bargains

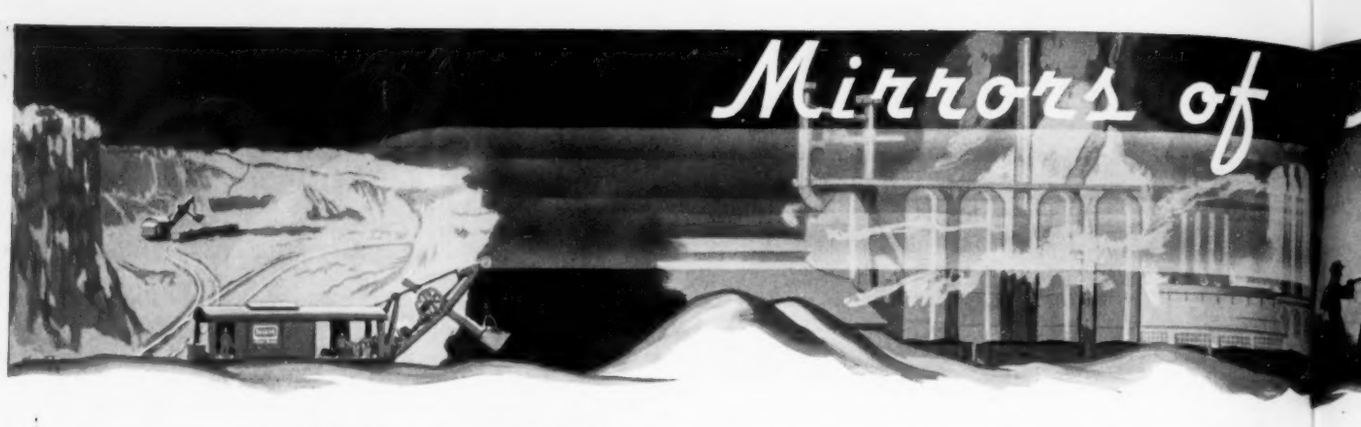
While the equipment generally brought good prices, considering particularly the usage, there were what appeared to be a number of good bargains.

A Star dual arc welder, type S.B., 900 r.p.m. with Western Electric 15-horsepower motor and other appurtances, went for $360. An Oliver tilting iron top direct connected motor drive saw table, with a large assortment of parts and angular gages, was sold for $235. This equipment was practically new and cost more than $950 originally.

A Crescent 24-inch direct connected motor drive disk sander, in good condition and costing about $450 when new, was sold to the Barnett Foundry & Machine Co., Irvington, N. J., one of the relatively few direct-user bidders. A $1200 Oliver No. 199E 24-inch planer, in excellent condition, went for $345.

Among the smaller, miscellaneous items was a Starrett No. 224F mi-

(*Please turn to Page* 46)



DETROIT

AUTOMOBILE manufacturers are having to think on three levels these days. One concerns the present production situation—which is easing off. The second deals with the production situation for the entire year—which still looks good. The third is in regard to 1937 models—plans for which are maturing, and some die work will be placed in a few days.

Last week 95,170 passenger cars and trucks were assembled, a decline of 3460 from the preceding week and 7430 below the highest level of November and December.

To further declines to a low point, probably in late February or early March, the industry is resigned chiefly because the high year-end production following November shows robbed the opening months of 1936.

In the low-price field the decline is not so apparent—yet. Ford last week made 26,900 units, compared with 26,500 the week preceding. Chevrolet held close to 25,000 units and is still melting 2000 tons of iron daily at its foundry in Saginaw. However, there were reports that some layoffs had been ordered by both makers.

Others Easing Slightly

Plymouth, on a 5-day week, is now assembling 2000 units daily, compared with 2400 recently. It has scheduled 18,000 to 19,000 units for February.

Hudson-Terraplane, which several weeks ago was above 3000 units a week, has eased off to about 2400. Hudson, incidentally, is bringing out six types of commercial cars in the Terraplane line, all having a 115-inch wheelbase, hydraulic brakes, steel roofs and chassis, and carrying up to three-quarters of a ton.

Graham is now assembling 135 units a day, compared with 180 recently. Dodge is down from 1250 a day to 950. Studebaker has scheduled 8500 for this month and 10,300 for February, but is not likely to reach a higher level.

Packard has scaled its February schedule down from 7500 units to 5000.

Olds has been holding up better than any other General Motors subsidiary, except Chevrolet, its weekly total being about 4500.

Chrysler is making 51 airflow and 200 airstream models daily; DeSoto is assembling 72 airflow and 150 airstream jobs a day.

In addition to actual declines in the assembly rate, releases for parts and supplies are lighter and offerings of scrap are being curtailed. There is also a disposition on the part of automobile manufacturers to play the game a little more closely in regard to inventories.

Except for the concessions in sheets and strip made late last fall, when new models were being put on the line, steel prices are holding, but purchasing agents are making more inquiries than they were concerning the strength of the market.

Keen Students of Industry

Purchasing agents also are scanning the 1935 financial statements of the parts suppliers and are preparing to put the forthcoming statements of steelmakers under the microscope.

To an outsider, the intimate knowledge of most purchasing agents concerning the flat-rolled steel situation is almost surprising. They know that Bethlehem is now rolling hot strip on its new wide continuous mill at Lackawanna; that the American Sheet & Tin Plate Co. will shortly turn over its new hot mills at Gary, although its new cold reducing unit will not be completed until June or July; they see the new continuous mill and open-hearth furnaces under construction at the Great Lakes Steel Corp. plant here in Detroit. They are expecting that Jones & Laughlin stockholders next month will approve $25,000,000 for a new continuous mill—and they all know that this tends to overbalance supply.

Purchasing agents also are a little skeptical that the steel frame house and other new outlets for flat-rolled steel will mature fast enough to compete for tonnage from these new mills.

This easier situation in production has by no means diluted the optimism in Detroit that 1936 will be a good year, at least exceeding 1935 by 10 per cent. The valley into which assemblies are lurching is regarded as the inevitable sequel to the November shows.

But to keep the record straight, this viewpoint ought to be recorded. Some of the better-informed executives look for the retail market to snap back in early spring and they anticipate good buying to June. Beyond that point, they refuse to forecast other than that they expect a good year as a whole.

Idle Plants Reopened

As an indication of this long pull outlook, General Motors expects to resume partial operations in its Brown-Lipe-Chapin plant in Syracuse, N. Y., in February, making accessories. Chrysler shortly will operate part of the old Willys-Ste. Clair plant at Marysville, Mich., as a service parts plant. Receivers for Willys-Overland are seeking permission to reopen their plant in Toledo and make 15,000 additional jobs.

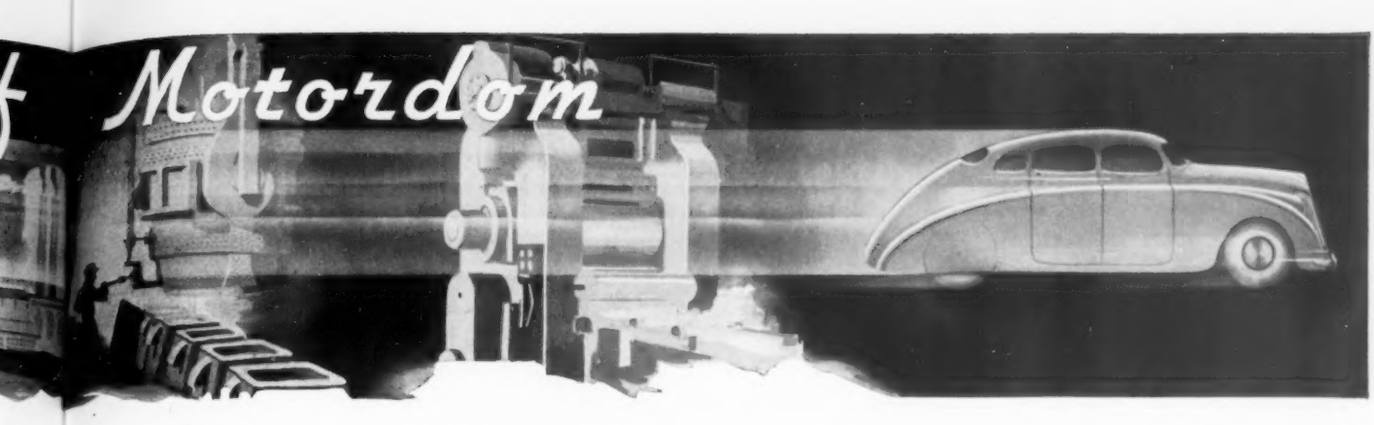
So the production situation stands as follows: Assemblies are definitely declining and are expected to so continue until late February or early March. For the long pull the prospect is good, notwithstanding political uncertainties. Manufacturers, however, are tightening up their belts a little and are shortening their inventories somewhat.

ALL this, however, is no concern of engineering and design departments, which are well along with plans for 1937 models.

Already the industry has decided to open the New York show on Nov. 11, continuing until Nov. 18. Hence, planning is now at the stage it would be in March or April in past years.

Of the General Motors lines, Pontiac is the most advanced. Of the Chrysler lines, Plymouth and Dodge are far enough along to indicate that some die and tool work will be placed this month. Packard faces a decision almost any day on dies for its low-price six.

There is nothing thus far to indicate anything startling in the way of body changes for 1937. It is possible that the large expenditure of



General Motors for a new stamping plant in Grand Rapids is the forerunner of the adoption of the all-steel body. While General Motors cars are equipped with a one-piece steel top, wood still is used for certain body reinforcement.

There is a definite trend toward more decorative wheels for 1937. Hub caps will be larger, practically eliminating or concealing spokes.

Designers increasingly like the general lines of the Lincoln Zephyr, of which about 100 a day are now being assembled. The more advanced designers are disappointed that Ford did not go the entire way and make the Zephyr the first rear engine car in commercial production.

At this time, at least, there are no plans for rear engine cars on a production basis for 1937. The matter of distribution of weight appears to be the governing factor, and this development may await lighter motors and lighter alloy steels.

Incidentally, the Ford Motor Co. has received copious publicity from its permit to experiment with a V-8 engine in an airplane. Here again weight is vital, and there is considerable opinion that instead of automobile engines being adapted to airplanes, the airplane engine is more likely to be adapted to automobiles.

There has been increased interest recently in two-cycle engines, especially for aircraft, indicating possible future use in automobiles. This revival of two-cycle engines is largely made possible by the use of fuel injection systems instead of carburetors. In fact, the army is equipping all of its planes with fuel injectors —which are quite different from superchargers. In the two-cycle engine, ports or rotary valves are used instead of poppet valves.

AN IMPORTANT manufacturer of starting and ignition systems will shortly broaden its line to include spark plugs, speedometers, air cleaners, and other lines of equipment. Chrysler is expected to be one of its principal customers, at the expense of the A-C Spark Plug Co. . . . . Chevrolet is offering as optional equipment a flexible steering wheel, similar to that on the Buick, at $8.75 . . . . A stamping company recently bid $1.42 each for making the gas tank for a low-price car. When the bidding stopped, the price was down to 90 cents, or less than the open market quotation on the terne plate alone . . . . Chrysler employes have benefited handsomely from the stock market rise in Chrysler common which has greatly enhanced the treasury of the stock purchase plan . . . . The first collision of a union of white collar employes with a manufacturer is occurring at Chrysler . . . . A spark plug manufacturer at Toledo will shortly announce a revolutionary method for making the ceramic part of its plugs. . . . The president of a company making a metal that is a principal competitor of steel in automobiles contends that no car should weigh over 2000 pounds, or 800 pounds under the average of the low-price field, and that the 25,000,000 cars now on the highways are carrying 10,000,000 tons excess weight. . . . An automotive engineer ranking among the three best urges this plan for discovering periods in which to read the bound volumes of technical papers of societies: A year of numerous and lengthy papers is usually a year of discussion inspired by the presentation of a basic idea the year previous; hence, study the papers of the lean years. . . . Hudson-Terraplane reports its distributors selling 23 per cent more used cars than in the comparable period of 1935, due in part to its policy of lower down payments and longer terms on the higher-priced used cars.

Labor Disorders Fewer

Pickets are still parading in front of the Motor Products plant, where a strike was attempted several weeks ago. While still on their guard, automobile manufacturers believe the strong stand taken by the Detroit city government against strike disorders has had a quieting effect. . . . Contrary to the general opinion, automobile manufacturers are finding younger men more easily controlled, putting more vigor into their work, and willing to work for somewhat lower rates, and the proportion of young men in plants is increasing. . . . A company that has done much in the way of pioneering electronic control is working on a photoelectric device that will provide a qualitative and quantitive analysis of the contents of an open-hearth steel furnace while it is in operation. . . . Bohn Aluminum & Brass Corp., Detroit, in 1935 produced over 40,000,000 pounds of aluminum castings, the basis of its claim to being the largest aluminum foundry in the world. . . . The Lincoln plant of Ford is unusually active. Not only is it building 100 new Zephyrs daily, but it also is assembling 55 large Lincolns a week, compared with only 30 a year ago.

Automobile Production

Passenger Cars and Trucks—U. S. Only
By Department of Commerce

	1933	1934	1935
Jan.	128,825	155,666	292,817
Feb.	105,447	230,256	335,700
Mar.	115,272	338,434	429,834
Apr.	176,432	352,975	477,746
May	214,411	330,455	364,727
June	249,727	306,477	361,321
July	229,357	264,933	337,044
Aug.	232,855	234,811	240,051
Sept.	191,800	170,007	89,805
Oct.	134,683	131,991	275,021
Nov.	60,683	83,482	398,024
Dec.	80,565	153,624	*385,000
Year	1,920,057	2,753,111	*3,987,000

*Estimated

Estimated by *Cram's Reports*

Week ended:

Jan. 4	65,840
Jan. 11	98,630
Jan. 18	95,170

Buys Artcraft Plant

Wheeling Steel Corp., Wheeling, W. Va., has purchased the building of the Artcraft Metal Co., Martins Ferry, O., to provide additional space for one of its three plants there, the Wheeling Corrugating Co.'s present factory being too small.

Production

STEELMAKING continued its upward swing last week, rising 1 point to 52½ per cent, compared with 51 and 35 per cent in the comparable weeks of 1935 and 1934, respectively. Pittsburgh and Chicago were each up 1 point, eastern Pennsylvania 1½, Youngstown 2, Cleveland 7, and New England 10. Other districts held steady, with the exception of Buffalo and Cincinnati which were off slightly. Further details follow:

Chicago—Increased 1 point to 52½ per cent last week. While the upturn so far this month has been slower than anticipated, some mills plan further additions to open-hearth operations within the next few weeks.

Steelmaking Operations

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended Jan. 18	Change	Same week 1935	Same week 1934
Pittsburgh	41	+ 1	33	24
Chicago	52½	+ 1	56	29
Eastern Pa.....	37	+ 1½	27½	24½
Youngstown...	64	+ 2	60	37
Wheeling	68	None	90	64
Cleveland.....	67	+ 7	82	59
Buffalo	45	— 5	42	32
Birmingham...	41	None	29	52
New England	93	+10	68	86
Detroit	88	None	71	79
Cincinnati	75	— 4	†	†
Average.....	52½	+ 1	51	35

†Not reported.

Blast furnace schedules are steady, with 20 of 41 stacks active.

Cleveland-Lorain—Up 7 points to 67 per cent. Republic Steel Corp. continued with six open hearths; Otis Steel Co., eight. National Tube Co. lighted four more open hearths, operating all 12.

Central eastern seaboard—Gained 1½ points last week to 37 per cent. The outlook for the current week is for little change, although the trade would not be surprised to see 40 per cent reached by the end of this month or early in February. Miscellaneous demand for finished steel has taken a little spurt, following completion of inventory season, and there are some good ship and railroad tonnages likely to further stimulate steel production in the near future.

Cincinnati—Declined 4 points to 75 per cent, 18 of 24 open hearths being in operation. A higher rate is not immediately anticipated.

Pittsburgh—Advanced 1 point to 41 per cent last week. Twenty-eight out of 61 district blast furnaces are blowing, an increase of one due to Bethlehem Steel Co.'s blowing in a Cambria stack. National Tube Co. put on an additional open-hearth furnace at McKeesport, Pa. It is estimated that the United States Steel Corp. plants operated at about 42 per cent, and the independents about 38 per cent last week.

Wheeling—Unchanged at 68 per cent, with 25 out of 37 open-hearth furnaces operating.

Youngstown—Advanced 2 points last week to 64 per cent, and will probably hold at this level at this week's opening. Later in the week, however, a decline of several points is anticipated.

Birmingham—Held at 41 per cent last week, with Tennessee Coal, Iron & Railroad Co. operating five open hearths at Fairfield, and Gulf States Steel Co. four at Gadsden. Tentative schedules indicate a 56 to 60 per cent rate the first week of February.

Detroit—Remained at 88 per cent last week, with 15 out of 17 open hearths melting.

New England—Up 10 points to 93 per cent, with indications of a decline to 83 per cent this week.

Buffalo—Off 5 points to 45 per cent last week, with 17 open hearths producing. This week a further drop is expected as two additional furnaces are taken off the active list.

Meetings

EIGHTEENTH ANNUAL NATIONAL METAL CONGRESS and exposition will be held in Public auditorium, Cleveland, Oct. 19-23, according to an announcement just made. This date is three weeks later than usual, the deferment being necessary to clear the Great Lakes exposition to be held in Cleveland, June 27-Oct. 4.

The Metal congress and exposition is sponsored by the American Society for Metals. Co-operating organizations are the American Welding society, American Institute of Mining and Metallurgical Engineers, and the Wire association. W. H. Eisenman, 7016 Euclid avenue, Cleveland, is secretary of the American Society for Metals and manager of the exposition.

CLEVELAND A.S.T.M. SPONSORS MEETING JAN. 27

A symposium-type meeting dealing with "Pearlitic Malleable Iron" will be conducted by the Cleveland district committee of the American Society for Testing Materials on Monday evening, Jan. 27, at the Cleveland club. A dinner at 6:30 p.m. will precede the meeting. Members of other technical societies are invited to participate.

The program will consist essentially of an extensive paper which is being prepared by a specially appointed committee from material furnished from various sources. The term, pearlitic malleable iron, was suggested as the best compromise for designating materials cast as white cast iron and subsequently heat treated so as to retain significant amounts of combined carbon.

Dinner reservations are being accepted by Arthur J. Tuscany, secretary of the Cleveland district committee, A.S.T.M., 1213 West Third street, Cleveland.

CALL CONFERENCE ON USE OF FLUORSPAR

Illinois state geological survey, the United States geological survey, and producers of fluorspar in the Illinois-Kentucky district are sponsoring a mineral industries conference at Rosiclare, Ill., Jan. 24, to be devoted to a discussion of trends in the utilization of fluorspar.

On the program will be M. M. Leighton, chief of the Illinois survey, division of the state department of registration and education, Urbana, Ill.; C. B. Fox, president, Aluminum Ore Co., East St. Louis, Ill.; Dean Walter McCourt, vice chancellor of Washington university, St. Louis; W. H. Voskuil, mineral economist, Illinois survey; F. H. Reed, chief chemist, of the Illinois survey; C. W. Parmelee, head of the department of ceramic engineering, University of Illinois; and L. W. Currier, staff geologist, United States survey.

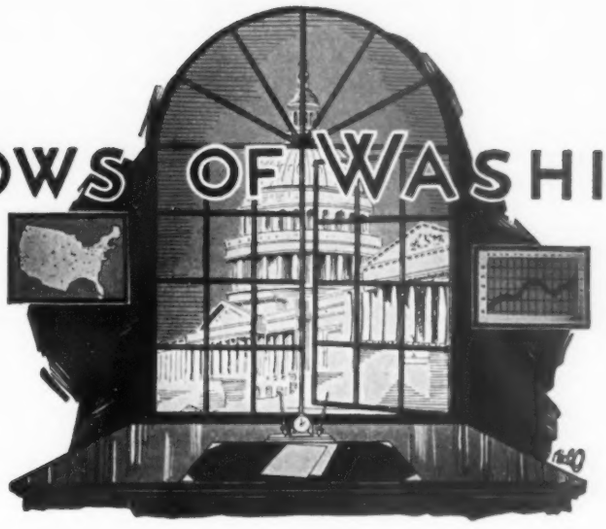
TO MEET IN PHILADELPHIA

Philadelphia district committee of the American Society for Testing Materials and the Philadelphia Engineers' club are jointly sponsoring a symposium on "Industrial Fuels" to be held at the Engineers' club, Jan. 21. Sessions will be conducted in the afternoon and evening at which papers will be presented by authorities on coal and coke, fuel oil, manufactured gas and liquefied gases.

Dravo Gets Pittsburgh Coal Equipment Contract

Dravo Contracting Co., Pittsburgh, has received a contract from Pittsburgh Coal Co. to design and fabricate equipment to unload coal from river barges to rail cars with an ultimate capacity of 500 tons an hour. This equipment is being fabricated in the Neville Island shops to be installed at the new docks of the coal company near the mouth of the Little Beaver river, 39 miles below Pittsburgh. The whirler crane and machinery will unload coal from barges brought down the Ohio river from mines of the company along the Monongahela river and will be loaded into cars for interior delivery, as for instance, to steelmakers in the Youngstown district.

WINDOWS OF WASHINGTON



WASHINGTON

NEW dealers were jittery again last week when it came time for the United States Supreme Court to hand down its decisions. The administration was expecting something on TVA, the Bankhead cotton law, and several other matters of equal importance.

It is quite apparent that the President and his cohorts were expecting an adverse decision. The court did not rule on TVA, but it did order some $200,000,000 of impounded taxes returned to processors on the ground that they were invalid under the court's AAA decision of the previous week. The court sent the Bankhead law back without decision because it held that the case had not come before it in the legal manner it should have.

The TVA decision still is pending, with every indication that it will be rendered by the time this issue reaches its readers. If the New Dealers have the inside information which some of them claim they have, the court's decision will also declare this law unconstitutional.

The Supreme Court in its decision of last week left open the point as to whether a billion dollars already paid to the farmers shall be retrieved by the taxpayers. Just try and get it.

Try To Evade Tax Problem

Most of the activity in congress last week was done behind closed committee doors. The senate was in session only a couple of days. However, the house passed the bonus bill, and there is every indication that it will be rushed through the senate—and that in spite of admonitions of the administration that it is going to cost money—and plenty of it—and finances are not so good, according to the secretary of the treasury who urged against the bonus passage behind closed committee doors.

In the meantime, because of the bonus and the AAA decision, there is talk of renewed and additional taxes. There is great difference of opinion on capitol hill, among members of both political parties, as to the tax question. Of course it is the desire of democrats that no new taxes be levied just before election, but it may be possible for them to evade this issue.

NO ACTION YET, BUT MAY TEST TRADE AGREEMENTS

Now that the Supreme Court is apparently in the mood to hold that all New Deal legislation is unconstitutional there is renewed talk here in farm and various other circles that effort will be made to see what can be done along the same line in having foreign trade agreements abrogated.

The farmers have several times talked of taking these trade agreements into court on the ground that congress cannot delegate such powers to the chief executive. It will be recalled that the constitution provides that all treaties shall have the approval of the United States senate before they become operative. There is the serious question in the minds of many constitutional lawyers—and good ones, too—as to whether this power can be delegated to the President.

At any rate, insofar as is known at this time, no action looking toward such a decision has yet been filed in any of the courts of the country. It is a well known fact, of course, that the farmers are much dissatisfied with some of the foreign trade agreements.

DOES BUTTER AND EGG RULING AFFECT GOVT. STEEL BUYING?

There is a difference of opinion here among both government officials and among representatives of steel companies as to just what effect a recent ruling of Comptroller General McCarl will have on the purchase of steel by the government.

It will be recalled that the procurement division of the treasury department recently notified all government departments and bureaus that they must insert in their future contracts that all government supplies must be purchased from companies using coal bought from mine owners who have signed up with the bituminous coal commission under the Guffey act.

This matter has been discussed pro and con for some months here. Just recently Mr. McCarl ruled that it was *not* necessary to buy butter and eggs from a company which was purchasing its coal from mines which have signed up with the commission. The decision, which involved Swift & Co., was generally supposed by many to be so wide that it would cover all commodities supplied to the government, including steel. However, this is where the difference of opinion develops.

Up to this time no specific ruling has been rendered dealing with steel. A high official of Mr. McCarl's office, who refused to be quoted in the matter, gave it as his opinion that the butter and egg decision covers all commodities. However, there is no unanimity of opinion on this point and steel representatives here are still doubtful about the decision being all-inclusive.

ROPER, MARSHALL LOCK HORNS ON NRA; STUDIES IN BALANCE

The old NRA is bankrupt—but that is a small matter with the NRA. It has been called worse things than that. At the moment, effort is being made to dig up from some place $1,000,000 to carry at least part of the personnel, for a short time anyhow.

Also, a difference of opinion has developed between Secretary of Commerce Roper, now entrusted with disbanding the NRA, and Leon C. Marshall, who is conducting the

so-called industry studies, of which steel is one.

In the executive order recently issued by the President turning NRA over to Mr. Roper's department, it was stated that the order supersedes all previous NRA orders. On the other hand, Mr. Marshall takes the view that he was specifically told in an executive order to make these industry studies and report to the President, and he refuses to take orders from the Roper organization.

In the meantime, Mr. Roper has set up a committee of three to go into the industry studies to see if there is any use in continuing them. Mr. Roper feels, it is understood, that anything accomplished by NRA should be salvaged if possible without the expenditure of too much money. For that reason, he wants these industry studies to either continue or be cut out—depending upon their importance.

A large part of Mr. Marshall's organization is now working on these studies and he refuses to release any of this personnel until they are completed. It is expected that Mr. Roper will win out, and it is therefore possible that these much-touted studies will never see the light of day.

HEAR STEEL FARES WELL IN AUTOPSY ON NRA

Secretary Roper stated at his press conference last week that he expects to send the complete Roberts report to the President for transmission to congress, if the latter so desires.

This report, asked for by the President last June, deals with hours, wages and trade practices since NRA was declared unconstitutional. It is understood that, insofar as hours and wages are concerned, the steel industry rates 100 per cent.

Mr. Roper feels, he stated, that all of the assets of NRA—if any—should be presented to the President for preservation. The Secretary stated that he had no idea of making any recommendations to the President for the continuation of NRA or any similar body in the report which he makes.

ICKES NOW THE GREAT STEEL DESIGNER!

There is a feeling in some quarters that Secretary of the Interior and PWA Director Ickes is softening in his attitude toward the steel industry. This is not so.

It is true that Mr. Ickes was much pleased to announce the other day, apparently in trying to ridicule the steel industry, that some American firms have begun the manufacture of Z piling, such as that proposed to be imported into the United States from Germany to be used in the New York Triboro bridge and the Miami jobs.

The secretary patted himself on the back in the belief that he had made the American manufacturers bring out a cheaper product which would eventually help the consumer.

As a matter of fact, it is reported here by an expert engineer, now associated with a steel company, that this matter was brought up years ago and that on the construction end it was felt that the Z piling type is not as economical to work with as the product which is now put on the market by American piling manufacturers. But, Mr. Ickes likes to believe that he has forced American manufacturers to this step.

BERRY RILES INDUSTRIALIST BY "BORROWING" HIS NAME

Announcement was made again last week by Maj. George L. Berry of the completion of committees for studies approved by the most recent conference he held here and called the council for industrial progress.

As a matter of fact, immediately following the announcement of these seven committees, including three management representatives on each committee, at least four of the management group notified Major Berry that they would not serve. In the case of one well known management representative, he was placed on a committee without his knowledge or consent when he had never attended any of the Berry conferences and in fact had notified the latter that neither he nor his well known industry would participate.

Without any permission from the man, Major Berry had his name placed on a committee and flashed all over the country in press association stories when his industry had specifically put a "thumbs down" on the Berry conferences. He has written a letter, using no uncertain language to Major Berry for this unwarranted action. This one case being known in all of its details, there is the question in the minds of some as to just how much of this is being done by the Berry organization.

O.K. ON WALSH BILL SEEN

There is talk here that the subcommittee of the house of representatives' committee is about to make a favorable report on the Walsh government contract bill.

This is a bill in which industry generally is not believed to have taken enough interest. It provides hour and labor provisions for all industries which accept government contracts.

It has been thought here recently that the administration was putting the soft pedal on this bill, but it has the active backing of the A. F. of L. It is therefore thought that it is politically expedient for this bill at least to be reported out of the house committee, and it looks very much now as though this is going to be done in spite of a great deal of opposition which has been registered with congress by industry.

Transportation

FREIGHT car requirements for loading 29 principal commodities will be 4,677,608 for the first quarter of 1936, it is estimated by the Regional Shippers' Advisory boards, an increase of 6 per cent over the actual loadings of 4,412,487 cars in the first quarter of 1935. A comparison of actual first quarter 1935 loadings and an estimate of first quarter 1936 car requirements follows:

	Actual first quarter 1935	Estimated first quarter 1936	Per Cent Increase
Coal and coke	1,886,561	1,920,772	1.8
Ore and concentrates	47,640	55,821	17.2
Iron and steel	261,038	305,279	16.9
Machinery and boilers	19,319	22,494	16.4
Agricultural implements and vehicles, other than automobiles	14,558	20,172	38.6
Automobiles, trucks and parts	174,340	212,525	21.9

Financial

A. M. BYERS CO., Pittsburgh, in pamphlet report for year ended Sept. 30, 1935, notes that billings for the last quarter of the fiscal year were 13 per cent greater than for the final quarter of the 1934 fiscal year, and billings for the first two months of the 1936 fiscal year exceeded those for the corresponding months of the 1935 period by about 21 per cent. Current assets, including $281,573 cash, were $2,027,521 and current liabilities were $156,632. This compares with current assets of $2,331,187, including $187,969 cash, and current liabilities of $114,229 on Sept. 30, 1934.

DIVIDENDS DECLARED:

National Steel Corp., Pittsburgh, regular quarterly dividend of 37½ cents per share, Jan. 31 to record of Jan. 20. This takes the place of the regular dividend of 25 cents per share, plus an extra dividend of 12½ cents declared in the past several preceding quarters.

Continental Steel Corp., Kokomo, Ind., special of $10 on the preferred Feb. 15 to record of Feb. 1, eliminating the arrearage.

G. E. ORDERS UP 18% IN 1935

Orders received by the General Electric Co., Schenectady, N. Y., in 1935 amounted to $217,361,587, compared with $183,660,303 in 1934, an increase of 18 per cent.

Orders for the quarter ended Dec. 31 amounted to $58,417,822, compared with $51,046,760 for the last quarter of 1934, an increase of 14 per cent.

CHearing on reorganization plan for Pressed Steel Car Co. will be held in Philadelphia Tuesday.

Died:

ALAN DEWEES WOOD, 61, retired executive of the Alan Wood Steel Co., Conshohocken, Pa., in that city, Jan. 8. Born in McKeesport, Pa., he entered the steel business of his grandfather, W. DeWees Wood, at McKeesport, soon after his graduation from Andover academy. In 1901 he became associated with the Alan Wood Iron & Steel Co., and his connection with that organization continued until 1929, when he resigned as vice president and treasurer.

♦ ♦ ♦

Charles E. McCombs, 70, vice president, W. M. Pattison Supply Co., Cleveland, in Cleveland, Jan. 12.

♦ ♦ ♦

James Montgomery Acklin, 51, Toledo industrialist, Jan. 13, while enroute to Florida. He was president of the Acklin Stamping Co., which he founded with his brother, W. Collard Acklin, in 1910.

♦ ♦ ♦

Julius L. Kipp, 65, president, Waterbury Iron Works, and treasurer of the Waterbury Foundry Co., Waterbury, Conn., Jan. 9, in that city. A native of Germany, Mr. Kipp had been a manufacturer in Waterbury for 22 years.

♦ ♦ ♦

Radclyffe Furness, 67, superintendent of the open-hearth and forge department of the Midvale Co., Nicetown, Philadelphia, in Jenkintown, Pa., Jan. 12. He was educated at St. Paul's school, Concord, N. H., and Princeton university. Upon graduation from the latter in 1891, he went to work immediately in the open-hearth department of the Midvale Co. He was a member of the Rittenhouse club.

♦ ♦ ♦

Charles H. Sessions, 85, son of Samuel W. Sessions, first president of the Lamson & Sessions Co., Cleveland, in Riverside, Calif., Jan. 7. Mr. Sessions went to Cleveland with his family in 1869, the year the company moved there from Southington, Conn. He worked with his father for a few years and then moved to the West, where he was active in business and civic affairs.

♦ ♦ ♦

Harry L. Tredennick, 52, president, Haws Refractories Co., Johnstown, Pa., in that city, Dec. 30. A native of Johnstown, he began his business career in the drawing room of the Cambria Steel Co. He later worked for the Hiram Swank Refractories Co., prior to becoming manager of A. J. Haws & Sons Ltd. In 1917 he was one of the prime factors in organizing the present Haws Refractories Co. He was a member of the American Iron and Steel institute, a director of the National Refractories Co. and the American Refractories institute. He was identified with various civic enterprises.

♦ ♦ ♦

Ernest R. Brown, 61, connected with National Tube Co., Pittsburgh, for the past 35 years, at Pittsburgh, Jan. 13.

♦ ♦ ♦

William J. Piersen, 53, recently western sales manager for the Adams & Westlake Co., Elkhart, Ind., manufacturer of railway supplies, in Evanston, Ill., Jan. 12.

♦ ♦ ♦

Sidney G. Plummer, 42, president of Pacific Coast Engineering Co., Oakland, Calif., in Oakland, Jan. 5. He was a well-known engineer and steel executive on the Pacific coast.

♦ ♦ ♦

E. S. Ekstrom, 48, president of the Mechanics Universal Joint Co., Rockford, Ill., in Rockford, Jan. 12. Mr. Ekstrom also was a director of the Sundstrand Machine Tool Co., Rockford, and a former president of the Rockford chamber of commerce.

♦ ♦ ♦

David L. Fryer, 73, president, Victor Piston Pin Co., Indianapolis, in that city, recently. Mr. Fryer was widely known as an electrical engineer and owned the first electrical repair shop in Indianapolis. He was a partner in the electrical engineering firm of Carman & Fryer.

♦ ♦ ♦

Dr. Walter Bell Scaife, 77, grandson of the founder of William B. Scaife & Sons Co., Pittsburgh, in Oakland, Calif., Jan. 13. He was a historian, economist, lecturer, lawyer, author and patron of arts, and spent the greater part of his life in Europe, studying at universities.

♦ ♦ ♦

William Poultney Smith, retired shipbuilder and for 40 years associated with the Cramp Shipbuilding Co., Philadelphia, in Cynwyd, Pa., Jan. 9. During the World war he was sales manager of the Cramp Shipbuilding Co., later becoming financial manager and retiring when the yard was closed.

♦ ♦ ♦

C. M. Weld, 59, senior member of Weld & Liddell, consulting engineers, New York, in that city Jan. 9. After graduation from Harvard, Mr. Weld worked in India for six years and was instrumental in discovering iron ore, limestone, and coal fields there, and helped to establish India's steel industry. An authority on manganese ore, Mr. Weld was chairman of the subcommittee on manganese of the American Institute of Mining Engineers, and wrote many papers on the subject. He was a member of the American Institute of Metallurgical and Mining Engineers, the Mining and Metallurgical Societies of America, American Iron and Steel institute, and numerous other societies.

♦ ♦ ♦

Herman F. Moell, 46, assistant purchasing agent, Cleveland Twist Drill Co., Cleveland, in Cleveland, recently.

♦ ♦ ♦

Thomas Kelly, 60, for many years identified with the steel industry, in Port Henry, N. Y., Jan. 9. He was general sales manager of the Witherbee-Sherman Co., Port Henry.

♦ ♦ ♦

Charles A. Gould, 40, salesman for the Denton & Anderson Co., Chicago representative of the Taylor-Winfield Corp., Warren, O., in that city, Jan. 13. Well-known in the middle western states, Mr. Gould had sold Taylor-Winfield welders and Ohio seamless steel tubes in that territory for the past 20 years.

♦ ♦ ♦

John L. Severance, 72, in Cleveland, Jan. 16. He was chairman of the board of Youngstown Steel Door Co., and a director of the Youngstown Sheet & Tube Co. Mr. Severance assisted the inorganization of the Linde Air Products Co., which he served for some time as secretary-treasurer. He was closely associated with the late Samuel Mather and William G. Mather, and was interested in many civic enterprises in Cleveland and northern Ohio.

♦ ♦ ♦

William McLain, 87, long identified in the steel industry, in Pittsburgh, Jan. 7. In 1882 he became associated with the Cambria Steel Co. as superintendent of its plow shop, remaining there until 1887, when he joined the Johnson Co., now the Lorain Steel Co., as assistant superintendent. In 1889 he was elected secretary of the company. In 1897 he left to open the Pittsburgh office of Cambria Steel Co., where he remained until his retirement in 1926, due to the merger with the Bethlehem Steel Co.

Ships Two Pre-Fabricated Hotels to Pacific Islands

Two complete pre-fabricated hotels of 45 rooms each will be built by the Pan-American Airways System, 135 East Forty-second street, New York, on Midway island and Wake island, transpacific air line bases. The pre-fabricated sections which will be used in the construction of these hotels were included in the cargo of the steamship NORTH HAVEN which sailed for these bases from San Francisco, Jan. 13. The cargo included complete furniture and supplies for these hotels.

Men of Industry

J. H. CHIVERS has been appointed general superintendent of Braeburn Alloy Steel Corp., Braeburn, Pa. He assumed his duties as of Jan. 1. Mr. Chivers formerly was melting superintendent at the Park works of Crucible Steel Co., having been affiliated with that company since 1927. He has been directly associated with high-grade tool and alloy steel manufacture for the past 18 years, and brings to his new position a wealth of knowledge in both electric and open-hearth methods of melting.

J. H. Chivers

Some of his previous experience was gained with the Universal Steel Co., Bridgeville, Pa., and Ludlum Steel Co., Dunkirk, N. Y.

Mr. Chivers is one of the twelve charter members of the Electric Metal Makers guild, and at the last annual meeting of the guild he was elected secretary-treasurer.

♦ ♦ ♦

A. S Hellstrom has been appointed manager of the Cleveland, and Youngstown, Akron, O., and Wheeling districts, with offices in the Caxton building, Cleveland, for the Torrington Co., Torrington, Conn., and its subsidiary, the Bantam Ball Bearing Co., South Bend, Ind. Mr. Hellstrom, who joined the Bantam organization in January, 1934, has been associated with the iron and steel industry for the past 15 years, in various capacities of design, operation, management and sales engineering.

He will continue to handle the engineering sales and service of Bantam roll neck and heavy duty bearings, together with Torrington's line of smaller bearings and specialties.

♦ ♦ ♦

Frank N. Satter is now affiliated with the Jessop Steel Co. as sales engineer, with offices at 1210 East Fifty-fifth street, Cleveland. He was formerly with the Bethlehem Steel Co. in the Cleveland office. T. W. Pennington is district sales manager.

♦ ♦ ♦

David S. Wright, for a number of years affiliated with the department of inspection and metallurgy at the Indiana Harbor, Ind., works of the Inland Steel Co., and prior to that connected with the Lackawanna Steel Co. in Buffalo and Chicago, has become associated with the sales department of Inland in its St. Paul, office.

♦ ♦ ♦

J. E. De Long, vice president and general manager of Waukesha Motor Co., Waukesha, Wis., will continue as chief executive, and a management committee will be in charge of the plant until a successor is named for H. L. Horning, president, who died recently. Board members state a successor will be named at the stockholders meeting in August.

♦ ♦ ♦

C. L. Rice, vice president and manager of the Hawthorne works, Chicago, of the Western Electric Co., Chicago, has been elected president of the Chicago association of commerce.

♦ ♦ ♦

Charles B. Getsinger, formerly director of fuel and power for the United States Steel Corp., has been appointed manager of raw materials, fuel, and power of the Pittsburgh district for Carnegie-Illinois Steel Corp.

Charles B. Getsinger

♦ ♦ ♦

Vincent Delport, director and manager, Penton Publishing Co. Ltd., Caxton house, London, and managing director in Europe of various Penton publications, including STEEL, *Daily Metal Trade*, *The Foundry*, *Abrasive Industry*, *Machine Design*, and *Power Boating*, has been made vice chairman of the international committee of Foundry Technical associations. This organization governs and schedules international foundry congresses, the next of which is scheduled for Dusseldorf, Germany, Sept. 15-20, 1936.

Mr. Delport has been American Foundrymen's association representative on this committee for several years and this honor comes to him after distinguished services at various international congresses. He was appointed European representative of the A. F. A. in 1925 and has served as a member of its international relations committee for some years. In addition to A. F. A., Mr. Delport is a member of the Association Technique de Fonderie de France, British Iron and Steel institute, Institute of British Foundrymen and Societe des Ingenieurs Civils de France.

Vincent Delport

♦ ♦ ♦

F. H. Frankland has been named chief engineer of the American Institute of Steel Construction, New York. When Lee H. Miller, chief engineer, died in April, 1933, Mr. Frankland took over his duties, in addition to his other functions in executive charge of the institute's district offices and technical service. Mr. Frankland is in charge of technical

research and development and represents the institute on numerous technical society committees.

Prior to joining the institute in 1928, he was structural engineer for Dwight P. Robinson & Co. for four years; vice president and chief engineer of Bancroft-Jones Co. for two years, and practiced in New York as a consulting engineer on the design and construction of steel bridges and buildings.

♦ ♦ ♦

William Watts Rose has been elected executive vice president of the Gray Iron Founders' society, with offices in Cleveland. In 1919, Mr. Rose entered the employ of the Bethlehem Steel Co., Bethlehem, Pa., and later was given charge of that company's interests in Brazil and was made vice president of the Bethlehem Steel Co. of Brazil.

In 1926 he resigned from Bethlehem and accepted a position with the Delco-Light Co. and, later, the Frigidaire Corp., both subsidiaries of the General Motors Corp. He organized the set-up of those firms in the territory extending from the Mediterranean to and including India, Burma, and Ceylon. Later, he was made regional manager in charge of this territory.

In 1931 the regional office was closed, and after engaging in consulting work in New York, Mr. Rose became associated with the American Sealcone Corp. in that city as assistant to the president. He was engaged in that work until called to Washington in 1934 to assist in certain administrative government work. He resigned this position to join the Gray Iron Founders' society.

R. B. Schenck

Who was one of the speakers at the production session of the annual meeting of the Society of Automotive Engineers, held Jan. 13-17 in Detroit. He is chief metallurgist of the Buick Motor Co., Flint, Mich., which position he has held for 15 years. Prior to this he was associated with the United States Steel Corp. for five years

♦ ♦ ♦

R. G. Klieforth, general manager, Universal Motor Co., Oshkosh, Wis., manufacturer of marine and industrial engines, has been elected president of the company, to fill the vacancy caused by the death of E. Homer Fahrney.

♦ ♦ ♦

Albert Ziemann, formerly manager of the mill supply department, Suelflohn & Seefeld Co., Milwaukee, which is being liquidated, has become associated with the Cordes Supply Co., 441 North Second street, Milwaukee, as manager of the hacksaw, grinding wheel and twist drill lines.

♦ ♦ ♦

Frank P. Cox, an authority in the metal cleaning industry, has been placed in charge of alkali cleaners and strippers for the Rex Products Co., Detroit. He will supervise the sale and service of alkali cleaners throughout the country.

George W. Walter, formerly editor of *Metal Cleaning and Finishing*, has been appointed advertising manager of the company.

♦ ♦ ♦

R. C. Brower, secretary-treasurer, Timken Roller Bearing Co., Canton, O., has been made a director of the company to fill the vacancy created by the recent death of J. G. Obermier. Mr. Brower joined the Timken organization in 1916 as assistant manager of the Timken Service & Sales Co., later becoming manager. He was then appointed assistant secretary-treasurer of the Timken Roller Bearing Co., being made secretary-treasurer in 1930.

♦ ♦ ♦

R. L. Mead, well-known through his 15 years of activity in the field of material handling equipment, has been made manager of the Chicago office of the Harnischfeger Corp., Milwaukee, with headquarters at 20 North Wacker drive. His prior connections include Industrial Brownhoist Co., Ohio Locomotive Crane Co., McMyler Interstate Co., and most recently was associated with the Link-Belt Co. as district sales manager.

Mr. Mead takes charge in the Chicago territory of sales covering the complete Harnischfeger line.

♦ ♦ ♦

Chester F. Hockley, who has been president of the Bartlett Hayward Co., Baltimore, since 1931, has retired to become president of the newly-reorganized Davison Chemical Corp. He will continue as a director of the Bartlett company.

Succeeding Mr. Hockley as president is Walter F. Perkins, formerly vice president and general manager. He first became associated with the Bartlett company in 1914, filling various positions up to that of general superintendent from which position he retired in 1927 to become manager of the Harrison works of the Worthington Pump & Machinery Corp. In 1932 he returned to Baltimore as vice president and general manager of the Bartlett company.

George E. Probest, Jr., formerly secretary and treasurer, has been elected vice president and treasurer.

Herman H. Vordemberge has been made secretary and assistant treasurer. He previously was assistant secretary and assistant treasurer.

♦ ♦ ♦

L. H. Derrer, formerly assistant works manager, Algoma Steel Corp. Ltd., Sault Ste. Marie, Ont., has been made works manager. He was graduated from McGill university in 1917, with a bachelor of science degree in mechanical engineering and for some time was employed in the department of gages and standards, Ottawa.

W. J. MacKenzie

Who as noted in STEEL for Dec. 16 has been made head of the alloy division of the Youngstown Sheet & Tube Co., Youngstown, O., succeeding H. R. Jones. He formerly was vice president of Interstate Iron & Steel Co., now a part of the Republic Steel Corp. Practically his entire career has been spent in the alloy steel business

In 1919, he was employed as a guide setter in the rail mill at the Sault plant, later becoming steam engineer in the fuel department. In 1922 he went to the Alan Wood Iron & Steel Co., Swedeland, Pa., plant, as assistant master mechanic in the blast furnace department. In 1926 he became master mechanic of the Laclede Steel Co. and the Laclede Tube Co., Alton Ill., and in 1930 became engineer of tests for both companies. He returned to the Sault last August as assistant works manager.

Other appointments include J. S.

Singer as superintendent of the rolls department, and W. A. Dawson as acting superintendent of shops and foundries.

Mr. Singer joined the Algoma corporation in 1912 and spent one year in the electrical department, six months in the physical test department and then worked in the roll shops for a time. He spent four months in charge of the rolls department of the Hubbard Steel Foundry Co., East Chicago, Ind. On his return from Hubbard in 1923, he became assistant superintendent of the rolls department in the Algoma plant, and for two years ending July 31, 1935, was superintendent of the merchant mills. At that time he returned to the rolls department as assistant to his father, the late J. B. Singer.

Mr. Dawson, went to Sault St. Marie about two months ago as assistant superintendent of shops and foundries. He was graduated from Queens university in 1923, with the degree of bachelor of science in Mechanical engineering. Prior to attending the university he had eight years practical experience in mechanical work. Before joining the staff of the Algoma Steel Corp., he was chief machine and tool designer of the Ford Motor Co. of Canada Ltd., Windsor, Ont.

♦ ♦ ♦

Joe Wernert, who has handled sales correspondence and special sales work for the Toledo Steel Products Co., Toledo, O., for the past six years, has been appointed sales representative for Ohio, Indiana, and Michigan.

♦ ♦ ♦

Cal C. Chambers has been made general manager of the Southern Malleable Iron Co., East St. Louis, Ill., succeeding V. S. Durbin.

Herman N. Brien has been made sales engineer. He is a practical foundryman experienced in all phases of the malleable iron industry.

Charles S. Bunting, an experienced metallurgist and chemist, has been placed in charge of the laboratory which the company recently installed.

Robert Skinner Joins Whiton Machine Co.

ROBERT B. SKINNER has resigned as secretary-sales manager of the Skinner Chuck Co., New Britain, Conn., to become associated with Lucius E. Whiton, president, the D. E. Whiton Machine Co., New London, Conn., manufacturer of chucks.

Mr. Skinner has been in the chuck business ever since he left school, learning the trade in the factory, actually building the product before taking complete charge of all sales promotional work.

Not only has he been active in his own business, but has found time to be vitally interested in association work. He has attended meetings of the American Supply and Machinery Manufacturers association over a period of more than 20 years.

His outside interests are numerous. An active churchman, he organized and for two years was president of the largest bible class in the eastern United States. He has been active in civic affairs, the Boy Scouts, and Y.M.C.A. He has two hobbies—homecraft and outboard racing.

The association of Mr. Skinner and Mr. Whiton bring together the descendants of two of the original chuck manufacturers.

The chuck industry originated in West Stafford, Conn., in the early forties. The founders of nearly all the companies trace back either directly or indirectly to this first start in Stafford.

David E. Whiton, founder of the D E. Whiton Machine Co., was born there in 1825 and began business there in 1856. The Whiton company was incorporated in 1884 with his son, Lucius E. Whiton, as an officer, and removed to New London, Connecticut in 1884. He has been a prolific chuck inventor and patentee and it is probably true that his designs have influenced the construction of hand operated chucks more widely than those of any other manufacture in the industry.

The Horton Co., where Robert Skinner's grandfather was employed before he founded the Skinner Chuck Co., in New Britain, was established in Windsor Locks by Eli Horton, who moved there from Stafford on account of the water power.

Mr. Skinner takes up his new duties as vice president and general manager of the D. E. Whiton Machine Co.

Robert B. Skinner

Lucius E. Whiton

Canners and Suppliers Open Convention at Chicago

Annual joint convention of the National Canners association, Canning Machinery and Supplies association, and National Food Brokers association got under way Jan. 20 at the Stevens hotel, Chicago.

In connection with the convention the Canning Machinery and Supplies association is holding an equipment exhibition, the largest in the history of the organization. Some 125 exhibitors occupying 40,000 square feet of floor space with their displays, have contracted for space.

This convention is the twenty-ninth annual meeting of the National Canners association and the fifty-second annual gathering of the Canning Machinery and Supplies association. Record attendance is expected at all three association sessions among those present being many prominent steel industry executives.

The exhibit will include a comprehensive display of canning equipment among which will be beer canning machinery, the latest major development in the industry. It is expected this latter will feature the new equipment to be shown.

This year questions that have been subordinated to the consideration of immediate and more pressing problems the past two or three years will constitute a large part of the program of the National Canners association. This is a return to the convention plans of other years, when the program provided an opportunity for canners to hear authoritative discussions of problems involving growing processing and manufacturing.

Editorial

Why Opinions on Housing Market Vary Widely

A CANVASS of opinion in the metalworking industries as to the opportunities in the housing field undoubtedly would show a wide range of differences. Some competent authorities are enthusiastic. Others are lukewarm or unimpressed. Still others are frankly skeptical.

The deeper one goes into the intricacies of the home building industry—and particularly into the many problems involved in adapting steel to residence construction—the more he realizes that there are valid reasons for the broad range of opinion. The prospect depends upon so many different factors that unless all observers are viewing the field from the same perspective, they are bound to arrive at different conclusions.

For instance, consider the scope of the home market. Few people realize the marked extent to which residence building activity to date has been restricted to a relatively small portion of the total potential market. This point has been brought out clearly in studies which Purdue university is making in connection with its housing research project.

A preliminary investigation confined to urban families and ignoring farm families shows the following striking facts:

Per Cent of Urban Families	Can Afford a House Costing
9	Over $10,000
1	9,600
2	8,600
3	7,600
4	6,600
6	5,600
8	4,800
13	3,800
19	2,900
22	1,900
10	1,000
3	600

Assuming that present and past building activity has been largely devoted to houses costing more than $5000, it is apparent that only the top 25 per cent of the market has been cultivated seriously. The Purdue project, which at the present stage is confined to houses costing in the neighborhood of $5000, touches a sector amountng to about 8 per cent of the total market. The remainder, consisting of 67 per cent of the urban families, represents a market that has been virtually untouched.

From this breakdown, it should be evident that the opportunities in house construction depend upon the sector of the market under consideration. Thus far almost all of the activity in connection with the application of steel to housing has been directed to the more expensive houses. In this bracket, the amount the prospective home owner is able to pay permits sufficient latitude to consider steel frame or other steel construction, modern heating or even air conditioning equipment, and many other modern appointments. This is an attractive market, and one in which material suppliers, architects, builders and manufacturers of household equipment are afforded free play for the development of ideas.

The lower part of the market, as represented by houses costing $5000 or less, presents difficult problems which will challenge solution for many years to come. The Purdue project, which is concerned only with houses that can be built for about $5000, already has developed the fact that it is difficult to build to the specifications and quality necessary to attract the prospective buyer for the amount of money available. In other words, the purchaser cannot obtain as much house value per dollar as he desires.

Key to Market in Lower Income Groups Lies in Reducing Costs Through Volume

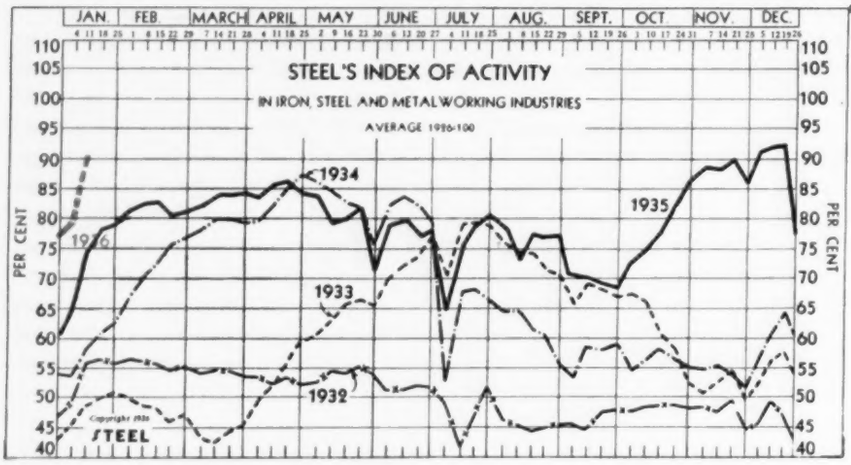
The big problem in meeting the needs of the 67 per cent of urban families in the untouched housing field is that of providing a suitable home for the limited money that can be afforded. The Purdue investigation, in its preliminary stages, indicates no great possibilities for cost reduction in the smaller homes. In fact, much of the pioneering in steel in recent years has been motivated by a desire to match costs with those of wood and other materials, rather than by an urge to provide cheaper houses.

It is unwise to draw comparisons between the automobile and house construction industries, yet there is an analogy between the two in regard to the price and volume of the unit products. The automobile was brought to early development through the higher price units after which the emphasis shifted to the lower priced cars. Refinements in the latter field advanced step by step with volume. Today the low priced car is the backbone of the industry.

Perhaps the house construction industry, when it reaches the proper stage of development in the upper quarter of its field, will find it possible to shift the emphasis to the lower three-quarters.

If this is true, then the objective of reducing costs should be given more direct attention than it is receiving today.

THE BUSINESS TREND



STEEL'S *index of activity in the iron, steel and metalworking industries gained* 11.9 *points to* 90.1 *in the week ending Jan.* 11:

Week ending	1935	1934	1933	1932
Nov. 9	88.4	54.9	50.7	47.7
Nov. 16	88.8	55.2	52.6	49.2
Nov. 23	90.9	54.4	55.4	44.5
Nov. 30	86.0	51.9	49.7	45.3
Dec. 7	91.7	56.8	52.6	46.6
Dec. 14	91.8	60.6	56.0	49.3
Dec. 21	91.9	64.4	58.0	46.9
Dec. 28	77.3	60.8	53.7	42.9
	1936	1935	1934	1933
Jan. 4	78.2†	65.4	53.6	45.3
Jan. 11	90.1*	73.8	58.1	48.6

†Revised. *Preliminary.

The index charted above is based upon freight car loadings, electric power output, automobile assemblies (estimated by Cram's Reports) and the steelworks operating rate (estimated by STEEL). *Average for* 1926 *equals* 100, *weighted as follows: Steel rate* 40, *and car loadings, power output and auto assemblies each* 20.

Industrial Activity Recovers Most of Year-end Losses

VIEWED from any standpoint, the rebound in industrial activity in the first full week of January leaves little to be desired. Almost all of the ground lost during the holiday season has been regained. In the week ending Jan. 11, STEEL's index of activity stood at 90.1, a gain of 11.9 from the previous week.

This is the highest point attained by the index in any corresponding week since that of Jan. 12, 1929. Also the latest index was exceeded only four times during 1935—in the weeks ending Nov. 23, and Dec. 7, 14 and 21.

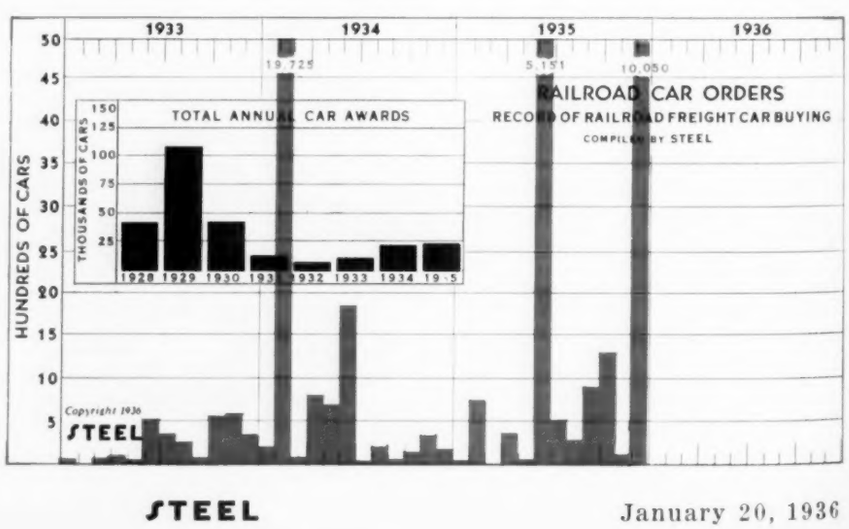
All factors contributed strongly to the gain in the index. Car loadings jumped back to a point comfortably above the 600,000 mark. Electric power output bounded back to 1,970,600,000 kilowatt-hours, which compares favorably with the record in the early weeks of December. The steelworks operating rate moved up to 51½ per cent, which means it has recovered practically all of its losses since the week before Christmas. Automobile assemblies totaled 98,630 units, which is the best showing since the week ending Dec. 21.

The sharp advances in these barometers must be considered more as adjustments from year-end lows than as indicators of the trend throughout the remainder of January. The report for the week ending Jan. 18, when it becomes available, undoubtedly will show a much more moderate adjustment.

Conflicting influences bear upon business today. Time must be allowed for the proper assimilation of the effect of the AAA decision. Other court decisions to be announced shortly may affect the course of industrial activity.

More time must elapse before the pattern for 1936 can be traced clearly.

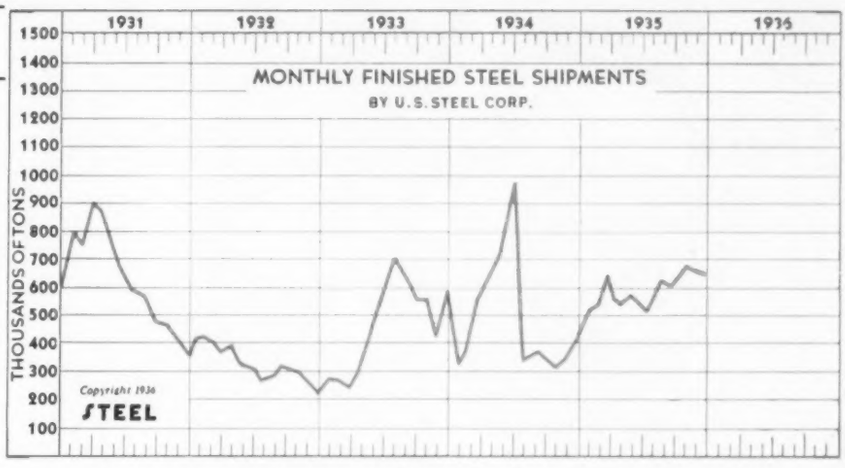
	1935	1934	1933	1932
Jan.	24	152	3	159
Feb.	806	19,725	0	35
March	0	30	5	105
April	350	800	50	0
May	2	717	8	60
June	5,151	1,835	500	0
July	500	19	306	25
Aug.	200	105	202	5
Sept.	875	7	23	1,298
Oct.	1,250	75	514	0
Nov.	100	254	533	2
Dec.	10,050	110	316	50



December Shipments Off; 1935 Total Exceeds 1934

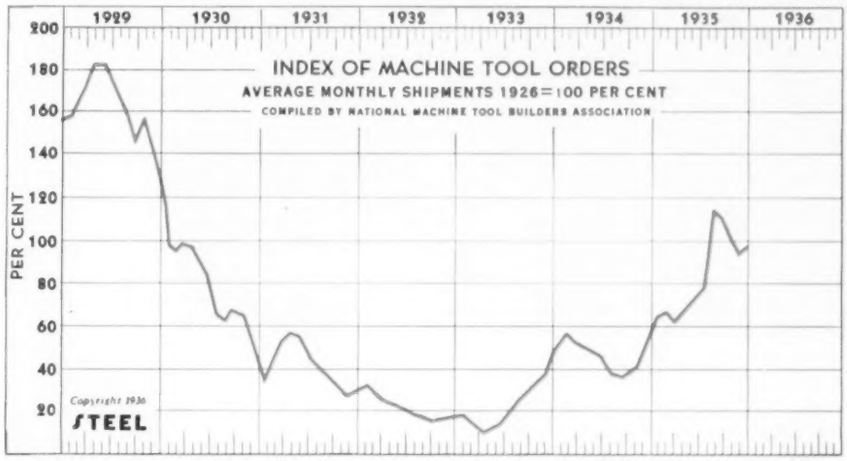
Gross Tons

	1935	1934	1933
Jan.	534,055	331,777	285,138
Feb.	583,137	385,500	275,929
March	668,056	588,209	256,793
April	591,728	643,009	335,321
May	598,915	745,063	455,302
June	578,108	985,337	603,937
July	547,794	369,938	701,322
Aug.	624,497	378,023	668,155
Sept.	614,933	370,306	575,161
Oct.	686,741	343,962	572,897
Nov.	681,820	366,119	430,358
Dec.	661,515	418,630	600,639



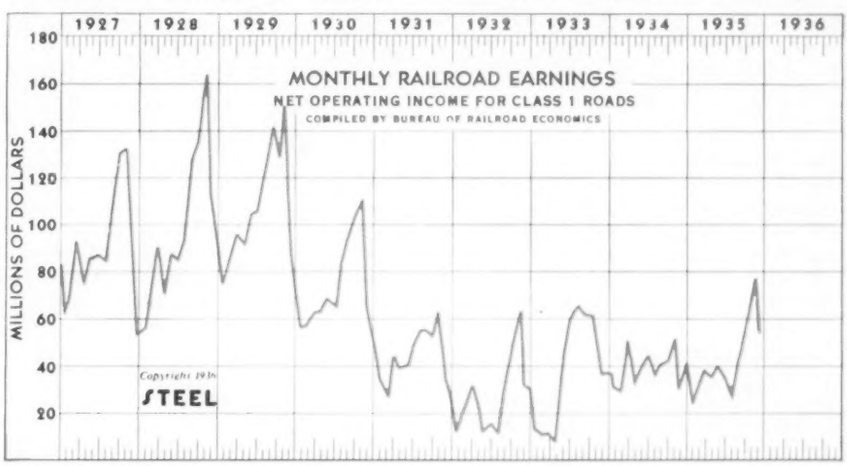
Machine Tool Orders Show Slight Gain in December

	1935	1934	1933	1932
Jan.	61.3	56.5	18.3	32.8
Feb.	61.5	58.2	15.2	30.4
March	60.3	50.9	11.1	23.9
April	60.3	48.5	8.3	20.6
May	67.1	46.8	10.6	20.8
June	76.7	42.6	15.5	21.7
July	94.7	38.6	22.4	18.7
Aug.	112.2	37.1	27.9	16.8
Sept.	108.5	37.4	30.9	15.3
Oct.	102.9	40.5	33.3	15.7
Nov.	93.8	44.2	38.9	16.4
Dec.	99.9	54.1	51.0	17.6



Class 1 Railroads Earn 2.54 Per Cent in November

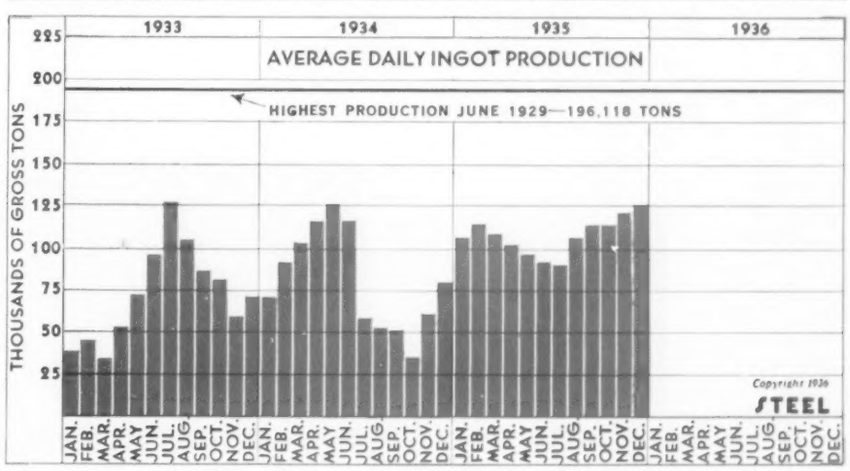
	1935	1934	1933
Jan.	$21,348,557	$31,058,275	$13,585,011
Feb.	25,719,919	29,420,772	10,133,779
March	37,850,965	52,217,083	10,805,518
April	34,625,786	32,433,939	19,351,463
May	39,505,069	39,699,194	41,042,629
June	34,024,691	42,037,757	59,831,292
July	26,851,397	35,441,265	64,752,602
Aug.	42,074,108	40,564,071	61,401,984
Sept.	57,359,339	41,713,425	60,608,882
Oct.	75,425,092	49,336,307	57,366,046
Nov.	54,234,305	32,540,502	37,662,122
Dec.	.....	38,738,295	37,726,341



1935 Ingot Output Shows 30.6 Per Cent Gain Over 1934

Gross Tons

	1935	1934	1933
Jan.	106,353	73,968	39,110
Feb.	115,740	92,164	44,709
March	110,313	103,646	33,268
April	101,558	117,443	53,817
May	97,624	125,907	73,201
June	89,236	117,672	98,632
July	87,316	59,578	126,734
Aug.	108,123	51,161	106,058
Sept.	113,193	50,759	87,811
Oct.	116,545	54,885	80,188
Nov.	121,279	61,947	58,507
Dec.	123,272	78,570	71,944



Heavy-Duty Tr

TRACTOR-TRAILER unit, loaded with 50,000 pounds of coal, making total weight of 90,000 pounds, is just a comfortable burden for this huge electric strip shovel. Dipper has 30 cubic yards capacity

COAL trucks so large as to make an ordinary passenger car look like a toy machine in comparison; a stripping shovel towering as high as a 14-story building, weighing more than 2,000,000 pounds, whose dipper can easily hold 75 men; trailers on the trucks that carry from 25 to 30 tons of coal in a single load; an all-steel tipple that crushes, cleans, grades and dumps coal into railroad cars on five tracks at 300 tons per hour capacity—these are some of the spectacular features of the Bobolink strip coal mine at Seelyville, Ind., 8 miles from Terre Haute.

Binkley Coal Co. is the owner of the Bobolink mine and owns or controls 26 mines in 14 seams. Company officials believe it will take approximately 15 years, even using the largest machinery ever built for such an operation, to strip the high grade of bituminous coal from the vein.

Co-operate on Equipment

When it was decided to open the Bobolink mine at Seelyville, it also was decided to install the most modern and largest strip mining equipment units ever built. Five manufacturing companies were called upon to build the equipment. They were the White Motor Co., Cleveland; the Bucyrus-Erie Co., South Milwaukee, Wis.; the McNally-Pittsburgh Mfg. Corp., Chicago; the Austin-Western Road Machinery Co., Aurora, Ill., and the General Electric Co., Schenectady, N. Y.

After a study and analysis of conditions and problems encountered in strip mining operations, White Motor Co. engineers developed a special type of 25-30 ton tractor-trailer unit, having six wheels, four-wheel drive, air brakes, and powered by a 580-cubic-inch, six-cylinder engine developing 140-horsepower at 2050 r.p.m. The Austin-Western Road Machinery Co. built the trailers for the trucks. The entire tractor-trailer unit weighs 40,000 pounds; it is 40 feet from bumper to bumper, 104 inches wide, and 101 inches high. The trailer holds in excess of 33 cubic yards of coal. Four of the units are operated at the mine.

Snow and rain have made conditions at Bobolink anything but satisfactory. The roads are quagmires of mud, full of bumps and holes, and wind over several steep grades. But the four powerful trucks surmount these difficulties easily and make the two-mile round trip from loading shovel to tipple, including loading and unloading, in 15 minutes flat.

The tractor-trailer units are so large special permits had to be obtained to transport them to the mine, and now they are not permitted to be driven on highways because of their immense weight and size. The trucks are used only to haul the coal from the loading shovel to the tipple.

The Bucyrus-Erie electrically-operated strip shovel is even more spectacular, so monstrous in size it had to be shipped to the mine a piece at a time on flat cars and assembled at the operation, a job which took nearly three months to complete.

30 Yards at a Bite!

The shovel, which strips overburden from the vein of coal, weighs more than 1000 tons, is the equivalent of 14 floors in height and can move from 2000 to 3000 cubic yards of earth every hour, depending upon digging conditions. It moves under its own power and carries a 30 cubic-yard, all-welded, alloy steel dipper, large enough to hold 75 persons comfortably. To illustrate the size of the dipper, one of the White tractors was backed cleanly into the dipper and easily lifted and swung about. To illustrate the power and strength of the shovel, one of the tractor-trailer units loaded with 50,000 pounds of coal, or a total weight of 90,000 pounds, was swung by cables on the bottom of the dipper and was lifted and swung about easily, as shown in an accompanying illustration.

The stripper has a maximum cutting (or digging) radius from center of shovel rotation of over 115

y Trucks, Power Shovels for Strip Mine

feet with a maximum digging height of almost 100 feet. The radius of the floor which the machine can clear for itself is 75 feet. The material can be dumped a distance of 215 feet from the point where it is dug—almost a city block—and, to allow plenty of room for piling high, a maximum dumping height of 70 feet is provided. This latter figure is comparable to the height of a modern, six-story office building.

The pull applied to the dipper of this machine may be compared to the lift required to raise a large, modern railroad locomotive weighing 150 tons. This lifting force of 300,000 pounds is applied by the large hoist motors plus the movable counterweight. The principal applied—comparable with that of a modern office building elevator—consists of substituting for part of the machine's stationary counterweight, a live counterweight which moves up and down as the dipper moves, thus greatly increasing both the digging force and speed of operation.

Thirty General Electric motors, capable of developing a total of 2500 horsepower, supply power for all operations of the stripping shovel. It is driven and controlled by two men and crawls on four independently-driven, caterpillar-type mountings and steers with ease by means of hydraulic controls.

The motors include two 250—horsepower hoist motors; two 125-horsepower swing motors; one 125-horsepower crowd motor; one 160-foot-pound torque dipper-trip motor; four 7½-horsepower leveling pump motors; two 5-horsepower steering-pump motors; one 5-horsepower derrick motor; two ¼-horsepower oil pump motors; four 75-horsepower traction motors; one 1000-horsepower driving motor; one 450-kilowatt 500-volt direct-current hoist generator; one 220-kilowatt 500-volt direct-current swing generator; one 110-kilowatt 250-volt crowd generator; one 52-cubic foot railway-type air compressor, and three 500-watt, industrial-type floodlight projectors.

Simple To Maneuver

The single operator of this machine's digging and stripping maneuvers controls the digging motions with no more difficulty than if he were operating the smaller electric coal loading shovel which works almost in the shadow of his machine.

Coal loading to the trailers is handled by a heavy-duty dipper especially designed to loading from a coal seam and providing a minimum of slack and fines.

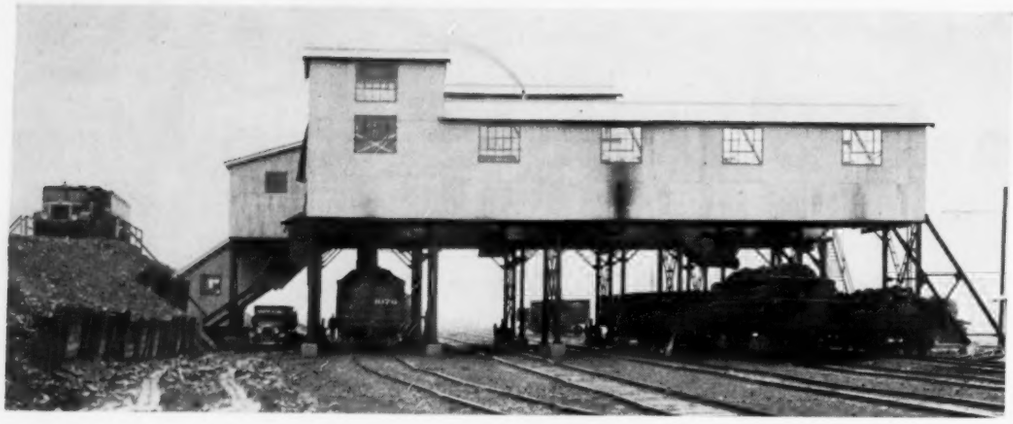
The 300-ton-per-hour capacity tipple was designed, manufactured and erected by the McNally-Pittsburgh Mfg. Corp. It is of all-steel construction, loading on 5 tracks, with picking tables and loading booms over 4 tracks. The shaking screens are in two separately operating sections, the slower operating screen or main shaker screen removing the 3 and 6-inch sizes from the run-of-mine and the high-speed Parrish-type screen making the operations in the under 3-inch product.

A scraper-type mixing conveyor is used to cross the ends of all the loading booms for selective mixing of any or all sizes and in the slack track end of this mixing conveyor a 36 x 54-inch single roll crusher is interposed and, with the mixing conveyor carrying on both top and bottom runs, selective crushing of any size of coal is possible. The crushed product may be delivered either to the bottom run of the mixing conveyor for delivery to any track, or may be delivered by scraper conveyor to a vibrating screen for removing slack.

W. G. Gregory, Binkley vice president in charge of sales, says, concerning strip mining: "We should like to stress the point that we do not sell coal at this mine (Bobolink) to be hauled away from the mine in trucks for delivery to consumer. Every pound of coal shipped from the mine will be shipped in railroad cars.

"For certain definite reasons there has been dissatisfaction with and prejudice against strip mined coal among practically all classes of buyers. This is due to the fact that coal stripping was started originally by people who were not coal operators, who knew and

SMALL electric loading shovel and the tractor-trailer unit are dwarfed alongside the giant stripping shovel which towers as high as a 14-story building



ALL-STEEL tipple, with capacity for 300 tons of coal per hour, loads on five tracks, with picking tables and loading booms over four

cared little about preparation of coal, and there are thousands of buyers scattered over this country today who show prejudice against strip mined coal as soon as it is mentioned. We coal strippers have been more or less directly responsible for this prejudice and in the past we have all been more or less guilty of loading coal at times that justified criticism.

"As a matter of fact, a few feet of 'caprock' consisting of rock, shale or slate on top of a seam of coal, to protect it from weathering or from contact with dirt above, is all that is necessary. There is no reason why coal that is as much as 20 feet deep should not be as well protected as if it were 1000 feet deep, as long as it has a little hard material over it.

"Then, if proper precautions are taken to see that dirt, mud, rock, or other impurity does not get mixed with the coal there is no essential difference between deep mined coal and strip mined coal."

Preparing Bridge Welding Code

ABOUT a year ago a committee was named by the American Welding society to study welding of highway and railroad bridges with a view to preparing a set of specifications covering this work. To obtain the best talent available, the personnel of the committee was selected with utmost care; P. G. Lang Jr., engineer of bridges, Baltimore & Ohio railroad, was named chairman.

Although welding had been used in the construction of bridges as far back as 1922, the committee realized that some pioneer work including a study and digest of recent literature and test reports had to be done before suitable specifications could be prepared. Because of its volume, the work was divided among various subcommittees. Shortly thereafter an extraordinary amount of information was collected and digested, enabling the subcommittees to offer specific recommendations to the main committee.

A three-day session of the main committee was held in New York recently at which the subcommittee reports were correlated and turned over to an editorial committee. It is expected that industry will be given the first tentative specifications early in 1936.

Originality Necessary

The forthcoming specification will prescribe unit stresses varying with the range of stresses in a manner similar to those adopted in one or two European countries but expressed much more simply and in a manner that will lend itself readily to amendment when American fatigue testing produces more dependable data. It is stated that the committee has accomplished a tremendous volume of work in an extremely short time.

It is the opinion of F. H. Frankland, technical director, American Institute of Steel Construction, and vice chairman of the committee, that the rapid development in welding during the past four years makes it imperative to exercise sound engineering judgment and clear thinking when evaluating the information available. The fundamental principles of welding are such that there are no precedents that can be adopted from other forms of construction, and it therefore follows that creative originality and inventive genius are necessary in the engineer engaged in the design and construction of welded bridges.

Insulated Steel Sections Used in German House

A new type of structure formed of sections of insulated steel sheets has just been developed in Germany, a report to the commerce department, Washington, from its Berlin office states.

The newly-developed panels are made of sheets 1/16-inch thick, with reinforced angles of rolled steel. On this one sheet are placed three layers of corrugated pasteboard, which are stretched and maintained at proper intervals by wood lath.

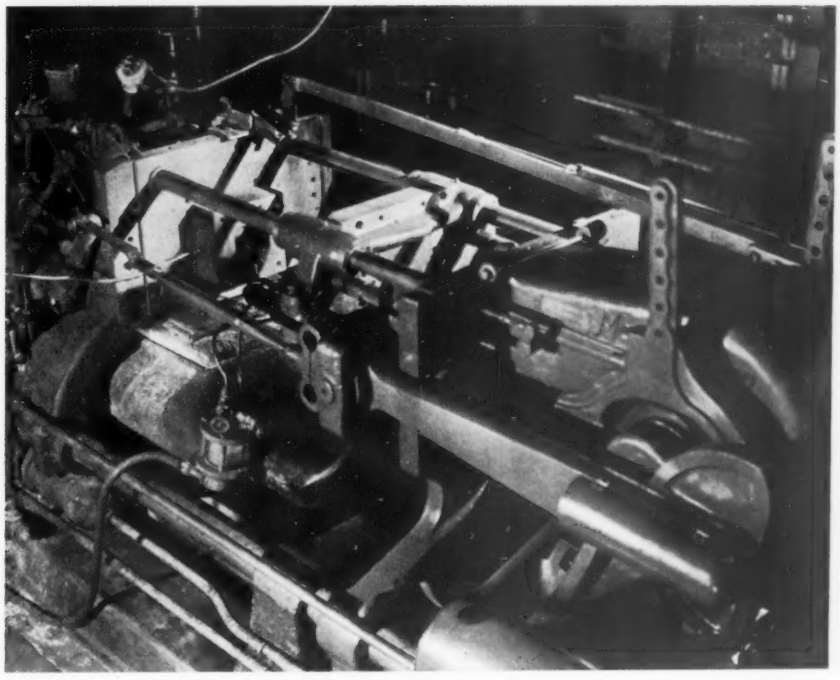
On this is another 1/16-inch sheet of steel and on the latter is a plate of insulite 0.59-inch thick. The whole is hermetically sealed. The outer surface is painted, and the inner surface of insulite may be painted or papered.

The panels are about 4 feet wide, about 9 feet long and weigh 176 pounds. The plates are the sections of the house. Some of the sections have windows and doors already built into them. The various sections fit together tightly by means of groove and tongue and they are further hermetically sealed by 0.16-inch felt strips, placed on the vertical side surfaces of the steel panels and pressed together at erection to a thickness of 0.12-inch. When the buildings are finally finished, the outer grooves are puttied. The inner walls and ceilings are made of similar panels. The inventor claims that these walls are soundproof and offer the same protection against heat and cold as walls made of three layers of brick.

Houses of this material, the commerce department report states, have already been constructed in Germany and a three-room structure was completed within two days with the help of a few unskilled laborers and a fitter. The cost was 15 per cent less than with brick and with quantity production greater saving could be made, it is claimed.

Permissible Variations in Mill, Floor Plates Listed

Permissible variations for sheared and universal mill plates and floor plates are listed in an 8-page pamphlet issued by the Association of American Steel Manufacturers Technical Committees, Pittsburgh. Allowable variations in the thickness, weight, width, length, flatness and camber for the mill plates, and the thickness, weight, width, length and camber for floor plates are specified.



Closeup of gas-fired die casting machine used in production of various magnesium alloy parts

Magnesium Alloy Developed For Die-Cast Products

BY J. B. NEALEY

DOWMETAL (magnesium alloy) is now offered in the form of die casting metal, having for some time been employed in sand casting, and for forging. Shapes, plates, sheets and strips of this light commercial metal have been on the market for some years, as well as tubes, screw machine stock, etc. Obstacles whch have retarded its use in many engineering fields have been overcome. Increased production by efficient methods has lowered its cost to the point where it can compete economically with other metals and as a result it is now serving many industries and its use is being extended.

Advantageous qualities include lightest possible weight, high strength-weight ratio, ease of machining and welding. Among limiting factors are its resistance to deep drawing, intricate stamping, spinning and hammering. As to finish, it soon turns a deep gray, whether polished or not, and has never been successfully plated. Other charecteristics are given in Table I.

Dow Chemical Co., Midland, Mich., supplies a large part of the world's production of magnesium, the metal which forms the base of all Dowmetal alloys. The company's plant is equipped to produce, cast and mill this metal in almost every known form including special extruded sections. Physical characteristics are improved by alloying it with aluminum and manganese, never more than 12 per cent of the former nor 1.5-2.0 per cent of the latter, however.

The company makes magnesium metal having a nominal purity of 99.9 per cent and produces seven alloys as shown in Table I.

Dowmetal can be die cast successfully by the press-cast (high-pressure) process. When produced in sufficient quantities these castings are less expensive than the corresponding sand castings. Other usual advantages of die castings over sand

Table I

Physical Constants of Dowmetal

Property	Pure Magnesium	Dowmetal M Mg 98.5% Mn 1.5%	Dowmetal F Mg 95.7% Al 4.0% Mn 0.3%	Dowmetal F Mg 93.7% Al 6.0% Mn 0.3%	Dowmetal A Mg 91.8% Al 8.0% Mn 0.2%	Dowmetal G Mg 89.9% Al 10.0% Mn 0.1%	Dowmetal B Mg 87.9% Al 12.0% Mn 0.1%	Dowmetal T Mg 91.8% Al 2.0% Mn 0.2% Cd 2.0% Cu 4.0%
Specific Gravity 175° F.	1.74	1.76	1.77	1.79	1.80	1.81	1.82	1.86
Weight—lb./cu. in.	0.063	0.064	0.064	0.065	0.065	0.066	0.066	0.067
Melting Point ° F.	1204	1200*	1160	1140	1120	1100	1075	1185
Coefficient of Thermal Expansion per ° F. (65-750° F.)	0.000016	0.000016	0.000016	0.000016	0.000016	0.000016	0.000016	0.000016
Thermal Conductivity C. G. S. Units 100-300° C.	0.38	0.30*	0.23	0.20	0.18	0.17	0.16	0.30
Electrical Resistivity in Microhms/cm³ at 20° C. (68° F.)								
As Cast Metal	4.5	6.5	9.5	11.0	13.0	15.0	16.5	6.5
Heat Treatment No. 1	....	....	10.0	12.5	15.0	17.5	19.0	....
Heat Treatment No. 2	....	....	....	....	14.5	16.0	16.0	....
Heat Treatment No. 3	....	....	....	....	14.0	14.0	14.0	....
Extruded	4.5	5.0	10.0	13.0	15.5	....	....	....

*Approximate.

Table II

Mechanical Properties of Cast Dowmetal

Alloy	Condition	Tensile Strength lb./sq. in.	Yield Strength (set—0.2%) lb./sq. in.	Elongation in 2 in. per cent	Compressive Strength lb./sq. in.	Shear Strength lb./sq. in.	Rockwell E Hardness	Brinell Hardness	Impact (Dow) ft-lb.	Fatigue Endurance Limit lb./sq. in.
M	Die Cast (Low Pressure)[1]	21-25,000	7- 9,000	7-11	.....	.....	-16*-11	30-35	3- 6	.....
	Die Cast (High Pressure)[2]	24-26,000	8-10,000	7-12	.....	.....	1-21	33-37	4- 7	.....
A	As Cast	24-28,000	10-13,000	3- 7	44-48,000	16-18,000	53-60	47-51	4- 8	6- 8,000
	Heat Treatment No. 1 ...	32-36,000	10-13,000	8-12	44-48,000	16-18,000	53-59	47-50	10-14	6- 8,000
	Heat Treatment No. 2 ...	32-36,000	10-14,000	7-11	45-49,000	17-19,000	55-62	48-52	8-12	6- 8,000
	Heat Treatment No. 3 ...	31-37,000	12-16,000	4- 8	46-50,000	17-19,000	62-70	52-58	5-10	6- 8,000
G	As Cast	21-24,000	12-15,000	1- 3	47-50,000	16-18,000	62-68	52-57	2- 5	8-10,000
	Heat Treatment No. 1 ...	30-35,000	11-14,000	6- 9	48-52,000	18-20,000	58-66	49-55	7-11	9-11,000
	Heat Treatment No. 2 ...	30-35,000	15-19,000	3- 6	48-53,000	19-21,000	69-75	57-63	4- 8	8-10,000
	Heat Treatment No. 3 ...	31-36,000	17-21,000	1- 4	52-57,000	20-22,000	76-84	65-75	2- 5	8-10,000
	Die Cast (Low Pressure)[1]	26-30,000	19-21,000	1- 3	.....	.....	72-81	60-70	1- 3	.....
	Die Cast (High Pressure)[2]	29-33,000	20-22,000	1- 3	.....	.....	72-81	60-70	1- 2	.....
B	As Cast	19-23,000	15-17,000	0- 1	45-49,000	15-17,000	69-73	57-61	1- 3	.....
	Heat Treatment No. 1 ...	20-24,000	12-16,000	0.5-3.0	46-50,000	16-18,000	66-71	55-59	3- 7	.....
	Heat Treatment No. 2 ...	26-31,000	17-22,000	0- 1	48-53,000	17-19,000	78-84	67-75	1- 3	.....
	Heat Treatment No. 3 ...	27-32,000	20-24,000	0- 1	52-57,000	17-19,000	82-90	72-85	1- 3	.....
T	As Cast	22-25,000	7- 9,000	4- 7	37-41,000	14-16,000	34-48	40-45	3- 5	.....

All alloys are sand cast unless otherwise stated.
Yield strength is defined as the stress at which the stress-strain curve deviates 0.2% from the modulus line.
Modulus of elasticity of Dowmetal is 6,500,000 lb./sq. in.
Tensile and hardness values are obtained on standard unmachined 0.5" diameter tension test specimens.
Compression and shear values are obtained on ⅜" diameter specimens machined from 1" diameter bars.
Fatigue endurance values are obtained on R. R. Moore machines using specimens machined from ⅜" diameter bars.
Impact values (except on die cast metal) are obtained on ½" x ½" x 4" specimens cast in graphite mold, machined with a notch 0.125" deep and a radius at the bottom of 0.0625". Die cast specimens are the standard A S T M ¾" x ⅜" x 6" unnotched bars.
*Negative Rockwell E.
[1]Standard type low pressure process.
[2]High pressure or press cast process.

castings include decrease in amount of machining, better surface finish, increased dimensional accuracy and metal saving by virtue of being able to cast thinner sections.

The dies used are similar to those employed in the aluminum die casting process and as a general thing are interchangeable. However, larger fillets and rounding of sharp corners are often advantageous. The quantity of production will, as with other die casting metals, dictate the quality of steel from which the dies shall be made. The less expensive steels are satisfactory when fewer castings are required. With the proper dies and alloys, Dowmetal die castings can be made, with the present equipment, to the following specifications:

Maximum weight of casting	3 lbs.
Maximum projected area ..	100 sq. in.
Maximum length	18 in.
Maximum width	10 in.
Maximum wall thickness ..	0.375 in.
(small castings)	0.060 in.

Dimensional tolerances for these castings are as follows:

Variation from drawing dimension	0.0015 in. per in.
Per inch of length of die..	(Min. 0.003 in).
Cast holes (min. dia.)	0.062 in.
Draft of side walls per inch of length	0.010 in.
Draft of cores per inch of length	0.010 in.

(Holes ¼-inch or less in diameter and less than ½-inch in depth require no draft).

The most commonly used die casting alloy is Dowmetal G, which combines good casting properties with good mechanical properties. It is well adapted for casting such parts as typewriter and adding machine bases and covers, handles for small tools and reciprocating parts in portable equipment. Properties are shown in Table II.

Dowmetal also lends itself well to standard forging practice. It is employed where higher strength and impact properties are required than can be obtained by die casting the metal. These physical characteristics generally approximate those of the extruded material used as forging stock. Press forgings are recommended wherever possible in preference to hammer forgings because of the greater time available for metal flow. Many designs are made by several different companies and in sizes up to those represented by gear covers, crankcase, nose pieces and the like.

Equipment Easily Adapted

Inasmuch as draft and shrinkage variations are slight, existing dies and equipment usually can be adapted easily. Where maximum strength is desired and the forged part is not too intricate, Dowmetal alloys F, J and A generally are specified and in the order named. For moderately stressed parts subject to salt water conditions Dowmetal M is employed. Extruded bars and rods are used for forging stock in preference to cast billets as they permit a wider forging temperature range and a greater speed of forging.

The forging temperature range runs from 600 to 825 degrees Fahr. and one hour at heat for each inch of thickness should be allowed. Forging furnaces should be equipped with automatic temperature controls and should be designed to provide a uniform heat throughout. Gas-fired furnaces are recommended as they are easily controlled and economical. This metal gives up its heat quickly so that rapid handling and preheated dies are necessary. Forging develops the maximum strength so that heat treating is superfluous.

Nickel Cast Iron Shows Good Thermal Expansion

Manufacturer of internal combustion engines or other equipment subject to wide variations of temperature have been troubled frequently by unequal thermal expansion of articulated parts. Although alloyed cast iron has not been generally recognized as possessing a range of expansivity suitable for use where thermal expansion is a factor, a nickel cast iron data sheet just issued by the International Nickel Co. Inc., New York, presents the results of recent research which indicate that this material belongs in this category.

This data sheet, titled "Thermal Expansion Characteristics of Some Nickel Cast Irons," should prove particularly useful to the designing engineer. The material was prepared by T. J. Wood, research metallurgist, Bayonne research laboratory, International Nickel Co. Inc., Bayonne, N. J., and is reprinted from the June, 1935, *Transactions* of the American Society for Metals.

Copies of the data sheet may be obtained upon request to the International Nickel Co. Inc., 67 Wall street, New York.

Applications of Tantalum Described in Booklet

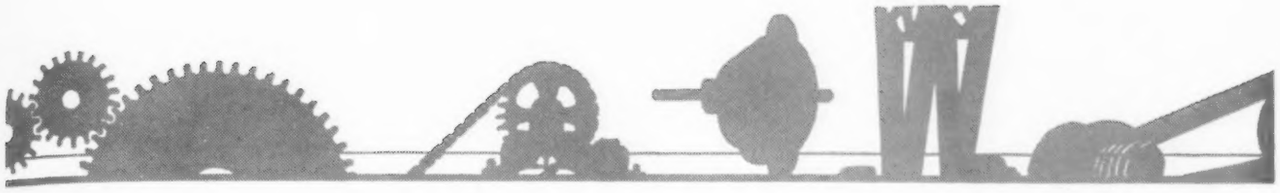
A booklet describing the applications of tantalum, a metallic element noted for its resistance to acid corrosion and its high electrical conductivity, has been issued by the Fansteel Metallurgical Corp., North Chicago, Ill. The 48-page booklet has 14 illustrations of fabricated tantalum and is supplemented by tables showing the characteristics of the metal and its alloys.

Tantalum pumps, stills, temperature control apparatus, valve parts, etc., are used in the production of acid and other chemicals, and where equipment is subject to strong corrosive attacks. Tantalum is especially suitable for equipment handling dry or wet chlorine.

The ease with which tantalum may be fabricated, its high melting point and its radiation characteristics are stressed in the use of the metal in the grids, plates, support rods, getter cups and filaments of electronic tubes.

A number of uses of tantalum, which has a melting point of 2850 degrees Cent., in heat-transfer surfaces are described.

Power Drives



Cold Speed Reducers

SPEED reducers exposed to atmospheric temperatures in winter often require heating before starting in extreme cold weather even though a winter oil is used. Two methods of heating are commonly used—steam or a blow torch. Each method necessitates certain precautions.

When the case is heated by the blow torch the latter should be directed to the part of the case containing the oil with just enough attention to the remainder of the case to warm it up. Overheating the case above the oil is likely to crack it. The same is true where the flame is directed to one spot.

Steam may be used only where the case is tight enough to prevent the entrance of water vapor which may cause emulsification, oxidation and the formation of sludge.

The use of electric heating elements immersed in the oil is increasing in popularity. However, the heat should be turned off as quickly as possible because continued heat without the circulation of the oil resulting from the operation of the gears may char the oil in contact with the heating elements.

It is far better to use some method of heating the oil than to try to use an oil much too thin for the service.

• • •

High Power Costs

EXECUTIVES in many plants began to give serious attention to their power problem when they found that with curtailed production during the past few years the bill for power continued approximately at its old level. The president of one comparatively small metalworking plant set an experienced power transmission engineer on the job to find out why power consumption remained so high. In this plant all machines are group driven from three parallel lineshafts, the two outer shafts belted to the center or driving shaft. This is what the engineer found:

By connecting an ammeter in the power line to the motor he learned that the power required for starting and running the shafts with the machines thrown out was abnormally high. Throwing off the belts from lineshaft clutches proved that defective clutches were responsible for much of this extra consumption. The foreman admitted that when the plant was running at full capacity the "motor heated some."

Some hanger bearings were placed poorly for the loading and widely spaced, in one case over 20 feet between hangers with the cross belted drive pulley 4 feet from the hanger. Fifteen feet of useless shaft was removed, the hanger placed close to the pulley and other hangers shifted to locations where they could be closer to pulleys and so decrease the bending load.

Installing new clutches, correctly spacing hangers and realignment of lineshaft reducing the running idle power demand to normal with a power saving that repaid the entire cost within a few months.

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Watch "Minimums"

IT IS unfortunate some of the common terms used with transmission equipment are open to general misinterpretation. For example, the term "minimum," as applied to diameter of pulleys, sheaves, idlers, crown and sprockets, is generally assumed to mean that the use of such sizes and ratings is satisfactory and recommended under any conditions.

What is actually meant is that *if* the service is not too severe, such minimums *may* be adopted but even the manufacturer hopes you will not go that far except in case of absolute necessity. Even then it is generally advisable to add at least a 10 per cent margin, or factor of safety, under ordinary conditions to insure more satisfactory life and operation. For severe service this factor should be increased.

Minimum diameters for pulleys are specified for two reasons: First, belts should not be bent to less than a specified radius for a particular thickness and type of belt material; second, the smaller the diameter, the less driving surface in contact with the pulley, which necessitates a higher tension to prevent slippage or, conversely, with the lesser driving surface in contact with the pulley, the greater the possibility of slipping and burning. Similar conditions exist to some extent with V-belts.

With chains, the load is carried on fewer teeth and so results in greater wear. The loss, however, usually is not so pronounced as with other types of drives.

Minimums, therefore, indicate an operating condition to be avoided whenever possible and to be applied only under normal operating loads and speds and with the proper allowances for such minimums.

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Grease or "Hash"

PROBABLY every reader of this item hesitates before ordering hash at a public eating place even though he may be fond of the dish when served at home. When eating away from home, he is more likely to inquire into the qualifications of the cook, the class and general reputation of the establishment for quality food and even then may be somewhat skeptical.

Lubricating grease, in a way, is a "hash." It may be a careful mixture of a number of selected oils, greases and other special materials, carefully compounded, mixed and treated by skilled workers according to a scientifically prepared and tested formula, designed to provide the best possible lubricant for a certain condition of temperature, pressure, and type of bearing. Or it may be a "hash" of refinery leftovers mixed together to look like and give a close approximation of the consistency and appearance of a good grease as seen in the can.

To the user who cannot afford, or has no facilities, for making a careful laboratory test by trained lubricant chemists one grease may appear as good as the other, and may be much less expensive. Tests of unknown lubricants in bearings may be, and often are, expensive.

Under such circumstances the only wise recourse of the user is to judge the reputation of the establishment offering to serve him and rely on its integrity and recommendations. Machines cannot stand up under poor lubricants.

Surface Treatment

Imitation Wood Finishes on Metal

EVERYONE has seen reproductions of wood finishes on metal and noted the realistic and beautiful effects which can be produced. With the increasing cost and dwindling supply of hard woods which are used for wall paneling, office furniture and other purposes, the use of reproductions of wood finishes on metal is coming more and more into general use.

Another factor which has increased the use of these finishes is the fact that it is desirable to have office equipment or special apparatus, which can be made only of metal, harmonize with surrounding wood equipment. In fireproof buildings, offices or other rooms can be finished with large panels of metal, which an observer will believe to be a costly mahogany, oak, or walnut installation until he actually touches it with his hand. Constant research has developed this type of finish to such a degree that it can no longer be referred to as "imitation wood" but rather as reproduction of wood on metal.

Many who have observed this material undoubtedly have wondered how involved the system of producing these finishes was and whether or not it was too costly for them to use. The answer, as will be illustrated, is that the process is neither as involved or as costly as the production of high-grade finishes on wood.

The process consists essentially of applying a primer, a base color matching the wood finish desired, application of the "grain," and finally several coats of clear lacquer. All the materials except the "grain" are applied by spray.

Since these finishes are used indoors, it is not necessary to rustproof the metal surfaces chemically before applying the finish. A light sandblasting is recommended as the most suitable surface preparation, although chromate processing might prove less costly and give the added benefit of protection against corrosion. This is important on interior surfaces which bear no finish.

FOR the priming coat it is recommended that a fairly heavy baking synthetic be used as it will aid in getting away from the hard metallic sheen characteristic of so many imitation wood finishes. However, where economy and production speed are controlling factors, there are satisfactory air drying synthetics and lacquers which may be used, but unless two or more coats are used it is best not to sandblast the metal, because the thinner materials may not sufficiently fill the roughened surface. It is good practice for better grade finishes to sandpaper the baked primer just prior to the application of the color coat.

Materials for the color coat of a "grained" finish are sold by several manufacturers and a wide variety of colors is available, making the selection of material largely a matter of choice in color.

The graining process is the most involved step in the production of this type of finish and also the most vital. The appearance of the final product hinges largely upon the "naturalness" of the grain. For this reason the most logical method of obtaining a natural grain is to photograph a large wooden surface with the desired grain effect. The process from then on becomes lithographic; a lithograph zinc plate is produced by commercial methods in common practice and the grain is applied over the color coat in flat bed lithograph presses. The graining inks are available in all the necessary colors from most ink dealers. Care must be exercised to obtain inks which will not "bleed" or run when the clear lacquer is applied.

Since these finishes are ordinarily subject to considerable fingering and handling, it is essential that a heavy coating of clear lacquer be applied. It is recommended, in cases where there will be any amount of contact with human hands, that a film of perspiration resistant clear lacquer approximately 0.001-inch in thickness be applied. The final coat should then be rubbed to a uniformly dull finish with powdered pumice and water or oil. Where a less expensive and less resistant finish is desired, there are clear lacquers available which dry to a flat, dull appearance without rubbing. These lacquers are suitable on surfaces which will be located in inaccessible places where they will not come in contact with human hands.

THIS finish will withstand a certain amount of bending and drawing when fabricating the metal but there are so many controlling factors in a finish of this type that no definite statements can be made before the finish to be used has been tried out in the plant. In many cases it will be advisable to fabricate the parts first and then apply the entire finish using a rubber hand roller to applying the graining ink.

The question of renewing this finish in the field has been solved satisfactorily. The old finish can be sandpapered down to the color or priming coat and a new color coat applied by spraying. The graining ink can be applied with a rubber hand roller and the final clear lacquer

t and Finishing

coats by spraying. It is well to point out that such renewal will be unnecessary if the clear lacquer coats are heavy and renewed before they are worn through. In many cases an old finish will take on a new appearance if a coat of clear lacquer is applied and rubbed down well with pumice and water.

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Galvanizers Stress Merits Of the Hot Dip Process

IN CONNECTION with its recent annual review on progress in surface finishes during 1935, STEEL has received the following letter from Stuart J. Swensson, secretary-treasurer, American Hot Dip Galvanizers Association Inc., 903 American Bank building, Pittsburgh:

"One of our members has just called to our attention that part of an article appearing in your Yearbook dated Jan. 6, beginning on page 226 and continuing on page 327, under the heading, 'Finishing Methods Are Improved.' On page 328 we find under the subhead 'Progress in Metal Coating' that you quote Dr. Colin G. Fink, head of the division of electrochemistry, Columbia university, New York, as stating 'The galvanizing industry is fully reconciled to the fact that electro galvanizing is as good and frequently superior to hot galvanizing.'

"The hot dip galvanizing industry through this Association and its board of directors has instructed the writer to address you protesting against the aforesaid statement; and further to advise that as far as the hot dip galvanizing industry is concerned, they have not reconciled themselves to any such fact, as they are firmly convinced that hot dip galvanizing as a protective coating for iron and steel, is more practical and economical to all other types of coating, including the electro galvanizing process, and is also far superior."

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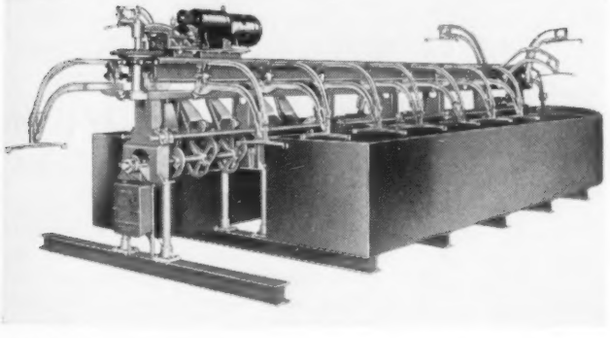
Synthetic Finish Unmarred By Drawing Operation

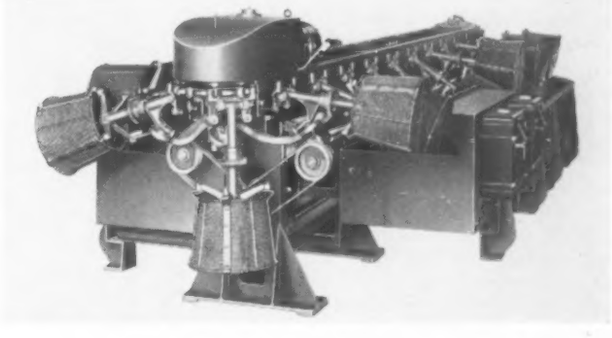
A synthetic coating for metals, sufficiently adherent and elastic to permit bending, stamping and even drawing operations without cracking or marring of the finish, has been developed by the Bradley & Vrooman Co., 2629-35 South Dearborn street, Chicago. Known as Sterilkote, it may be had in a variety of attractive colors which develop into hard, glossy coats. Claims for it are said to be based on results of extensive tests over a long period.

It is recommended particularly for lining beverage and food containers, due to its being non-toxic, odorless and tasteless, as well as non-porous.

While primarily designed as a liner, the new finish also is recommended for metal surfaces that are subjected to extremes in exposure and hard usage, such as washing machine lids, special types of dispensing cabinets, laboratory units and a host of other fabricated units.

Will Plate Automobile Parts in Russia





FOUR full automatic and two automatic small parts plating machines soon will be shipped to Russia where they will be put to work in the Stalin Motor Co. plant at Moscow. This plant manufactures automobiles and motor trucks; it now employs 25,000 men and, after the present expansion program has been completed, this number will be increased to 60,000. STEEL for Nov. 25, p. 15, showed a model of a streamlined car which is about to be placed in production at this plant. The full automatic machines, illustrated at left, will be used for nickel and copper plating radiator shells, radiator grilles, windshield frames, hub caps and other large parts. Such parts will be hung on racks on carrier arms and automatically carried through the various cleaning, plating, rinsing and drying operations.

Nuts, washers, small brackets and many other small parts which cannot be racked are to he handled in two barrel machines, illustrated at right, in which cleaning, plating and final-rinsing operations are performed automatically. The machines will be shipped by Frederic B. Stevens Inc., Detroit, on order of the Amtorg Trading Corp., New York, which states that this is the first step in a broad program of expansion involving metal finishing facilities in Russia

A.S.T.M. Group Approves Publication of Standards

ON THE recommendation of a number of standing committees, committee E-10 on standards of the American Society for Testing Materials recently approved for publication as tentative a number of new proposed standards, approved revisions in several existing tentative specifications, and accepted for publication as tentative revisions in several standards. Among the recommendations on new standards were several submitted by committees in the fields of steel, and iron-chromium-nickel and related alloys.

Among the new specifications approved were following developed by committee A-1 on steel:

Heat-Treated Carbon Steel and Alloy Steel Track Bolts.
Carbon Steel and Alloy Steel Castings for Railroads.
Carbon Steel Castings for Miscellaneous Industrial Uses.
Electric Resistance Welded Steel and Open-Hearth Iron Boiler Tubes.
Carbon Steel Heat Exchanger and Condenser Tubes.
Forged Steel Pipe Flanges for General Service.
Boiler and Firebox Steel for Stationary Service.
Forged or Rolled Alloy Steel Pipe Flanges, Forged Fittings, etc., for Temperatures up to 1100 Degrees Fahr.

Approve Revisions

Extensive revisions were approved for incorporation in existing tentative specifications covering high-strength plates and in specifications for cold rolled strip steel. Tentative revisions will be published for comment and criticism in connection with the standards for structural steel and the standard covering lap welded and seamless boiler tubes.

The new specifications for track bolts resulted from a joint conference of representatives of the rail committee, A. R. E. A.; American Institute of Bolt, Nut and Rivet Manufacturers and committee A-1. They are in effect a consolidation of two existing standards which they may eventually replace and they incorporate requirements for nuts not provided for in existing standards. The so-called soft grade of nuts must conform with screw steel grades of A.S.T.M. specifications for hot rolled bar steel (A 107-33) and when high strength (so-called hard nut) is specified carbon range is minimum 0.40, maximum 0.55 per cent.

The new casting specifications resulted from the withdrawal in June of the previous tentative specifications for carbon steel castings for industrial, railroad and marine uses (A 154-33T). It developed that the consolidation specification was not entirely satisfactory and requirements for castings for these three fields will be provided for in separate specifications.

The new tentative standard covering heat exchanger and condenser tubes resulted from the work of a joint committee on which the American Petroleum Institute and committee A-1 were represented.

Pipe Flange Specifications

While there is an A.S.T.M. specification covering pipe flanges for high-temperature service, a demand for requirements for this material for general service resulted in the new specifications being developed. The new specifications for alloy steel pipe flanges, forged fittings, etc., for temperatures up to 1100 degrees Fahr. is a companion specification to the existing ones covering alloy steel pipe and castings.

The new specifications covering boiler and firebox steel for stationary service supersede the existing standard A-70. They have been amplified to cover plates up to 4 inches in thickness.

The revision affecting the structural steel specifications for bridges (A 7), buildings (A 9) and silicon steel (A 94) involves the finish clause. It provides that surface imperfections not affecting full utility of structural pieces shall not be considered injurious defects in shapes 3/8-inch or more in thickness and that a workmanlike finish may be given such pieces by definitely prescribed methods. Surface imperfections less than 1/16-inch in depth may be removed by grinding; when 1/16-inch or more in depth pieces shall be chipped and welded under limiting conditions as follows:

The cross sectional area shall not be reduced more than 1.5 per cent at any point—the total area of the chipped surface cannot exceed 2 per cent of the total area of the piece. The maximum depth of depression after removal of the imperfection cannot exceed the following:

Maximum depth, inches	Thickness, inches
1/16	3/8 to 1/2
1/8	1/2 to 1
3/16	1 to 1 1/4
1/4	1 1/4 to 2 1/4
3/8	2 1/4 to 3 1/2

Welding requirements are incorporated in this proposed revision. The revision will be published for a year or more to elicit comment and criticism before action is taken to incorporate it in the formal standards.

Alloy Standards

For over a year committee A-10 on iron-chromium, iron-chromium-nickel and related alloys, has been developing specification requirements for various types of alloys in its field. At the A.S.T.M. annual meeting in June, four specifications were approved by the society covering three types of chromium steel castings and soft corrosion-resisting chromium-nickel steels (sheet, strip and plate). These were the first specifications developed by the committee. At the recent meeting of the standards committee seven additional specifications were approved and will be published at A.S.T.M. tentative standard. They cover the following:

Soft Corrosion-Resisting Chromium Steels (Sheets, Flats, Strip).
High-Strength Corrosion-Resisting Chromium-Nickel Steels (Sheets and Strip).
Alloy Steel Castings: 20 Nickel, 9 Chromium, 24 Chromium, 12 Nickel; 25 Chromium, 20 Nickel; 28 Chromium, 9 Nickel; and 35 Nickel, 15 Chromium.

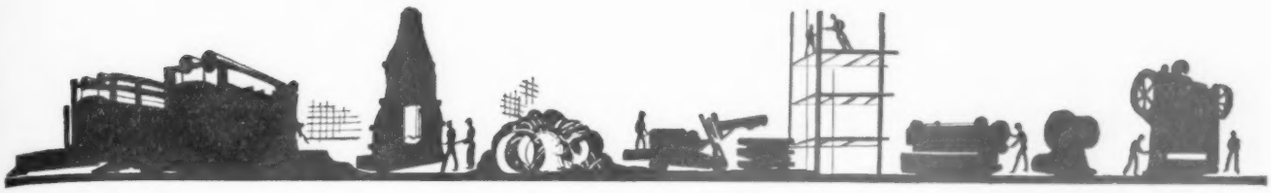
The specifications cover process and manufacture, chemical properties and tests, physical properties and tests, finish, etc. In the case of alloy steel castings where corrosion resistance is of prime importance tension tests are required only when specified on the order in which case one tension test and when specified one bend test shall be required from each melt. The soft and high strength sheet and strip specifications require both bend and tension tests.

While the committee has conducted exhaustive investigations of various types of corrosion tests, no corrosion tests are provided for in the specifications, the committee having voted not to include such tests.

Purposes, Limits of Motion, Time Studies Are Outlined

Purposes and limits of motion and time studies, and a detailed account of various techniques in current use in manufacturing organizations are outlined in a booklet entitled *Operation Study*, published by the Metropolitan Life Insurance Co., 1 Madison avenue, New York. The various steps in operation study procedure from preliminary analyses through actual motion and time study work are set forth. Job standardization and reports for control are also discussed. Copies of the 20-page booklet, which is supplemented by charts, can be obtained from William J. Barrett, manager, policyholder's service bureau.

Methods and Materials



Pipe Railings Are Of New Type

PIPE railings of a new type are assembled by welding and have jointless steel posts instead of the usual tubular fittings. Developed by the Fabricated Steel Products Co., Wheeling, W. Va., these railings are made from standard mild steel or copper-bearing steel pipe. The company makes weldable flanges suitable to all angles from 0 to 70 degrees which are attached to the posts by concealed welds which are made in recesses in the bottom of the flanges.

These flanges may be used with any angle that may be necessary on ramps or stair stringers. Rectangular flanges are provided which have been designed primarily for high angle railings between 15 and 70 degrees and these rectangular flanges may be used on flat rails as well as the round flanges. Either type may be used as slip or attached flanges where the pipes abut walls or other structures.

Wide Latitude in Design

For stairway or flat railing, posts may be cut or mitered accurately at the factory so that they can be welded to the steelwork of the structure and eliminate flanges entirely. The method permits the widest latitude in design and method of fastening to supporting structures. The company utilizes different types of joints, reinforced and not reinforced. The amount of field welding required is small and fieldwelds purposely are located where they readily can be chipped or filed or otherwise smoothed down to the surface of the pipes.

Among the special features of these new patent applied for railings is the fact that the post is always of one piece; that is, it is unbroken at the intermediate run rails. Due, also, to special automatic machines the intersecting joints are truly machined to fit and there are no exterior or exposed welds of any sort, resulting in an absolutely smooth exterior.

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Inadequate Lighting Takes Heavy Toll from Industry

In relating the subject of lighting to industrial accidents, it is estimated that on the average a company loses $1000 every time a laborer suffers an injury. This represents the sum paid for compensation, doctor bills, hospital fees and such indirect costs as labor turnover, value of lost production, and damaged machinery and materials.

According to Dean M. Warren, General Electric Co., Nela Park, Cleveland, author of an article on protecting workers' eyes appearing in the January issue of *Electrical Production* published by the Electrical League of Cleveland, this means that the total cost of accidents in American industry each year amounts to about 1½ billion dollars. If it could be said that 15 per cent of this amount could be saved by good lighting, the saving would amount to more than ¼ billion dollars. On a 5 per cent basis, the saving would be about 78 million dollars.

A recent survey of some 3000 industrial plants shows their average level of illumination to be in the neighborhood of 5 foot-candles. Researches by Dr. Matthew Luckiesh and Frank K. Moss in the development of the science of seeing show that four times this amount, or 20 foot-candles of light should prevail throughout the room and that as much as 100 foot-candles may be provided to advantage at individual tables, benches, and machine points where close visual work is done.

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Cleaning Discolored Monel Screw Machine Products

The use of sulphur base cutting oil in high-speed automatic screw machine operations may discolor monel metal parts. This discoloration is due to the formation of metallic sulphides by the sulphur in the oil. The discoloration is removed readily by dipping the parts in a cold solution of sodium cyanide. The solution is made up in the proportions of water 1 gallon, sodium cyanide

Accurate Grinding

GROUND TO PRECISION OF 0.002-INCH IS THIS QUILL, one of six on each of the 57 streamlined locomotives being built for the Pennsylvania railroad. Each quill is placed over an axle and through it power is transmitted to the axle from a twin construction motor mounted as sprung weight, the quill compensating for all relative motion between axle and motor. For grinding the quill, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., employs 30 x 4 x 12-inch wheels, using 36-J grit for the body and 24-CK on the radius of flange

½ to 1 pound. The time required for cleaning is from 5 to 30 minutes, depending on the degree of discoloration. Caution should be used in handling this solution as it is a deadly poison.

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Welding Is Employed To Remove Broken Studs

Removing broken studs is a problem which every so often bobs up to confound plant engineers. This problem is no longer as difficult as it once was, for the welding process has provided a quick and inexpensive solution.

One practical welder has found the following method completely satisfactory for removing broken studs from castings. He places a nut slightly larger than the stud above the broken stud and arc welds the two together through the hole. After the nut is cool a wrench is used to back out the stud. This operator recommends using fairly high amperage according to the size of the studs.

Another welder has found this method extremely helpful in removing broken cylinder head studs from automobile engine blocks. In one instance the stud was broken off almost flush with the block and to make matters worse it was at the rear of the motor which was set under the cowl in such a way that the stud could not be drilled. A nut was placed over the stud and welded to it, after which the stud was removed with a socket wrench. It was estimated that about a whole day's work had been saved, because without the procedure adopted the engine would have had to be removed.

Compression Yield Point of Casing Is Increased Sharply by New Process

MOST engineers have found that the oil well casing furnished under A. P. I. specifications is satisfactory within the limits set for the product and for the service most commonly encountered. However, the production of a suitable casing for deep well operation has presented a problem which is becoming increasingly important to the oil producing industry because greater depths of drilling have brought to light large increases in the available oil supply both in the United States and in other countries.

Pressure on the outside of casing pipe used in oil wells is considered to be directly proportional to the depth of the well and anything which will economically increase the collapse strength of the casing without increasing its thickness will obviously add to the economical depth to which such pipe safely can be set into the ground. Therefore, the most important physical property of casing pipe, governing its resistance to collapsing pressure, is the compression yield point in the direction transverse to the axis of the pipe. Likewise, the most important dimensional property in resisting collapsing pressures is the relative thickness of the casing.

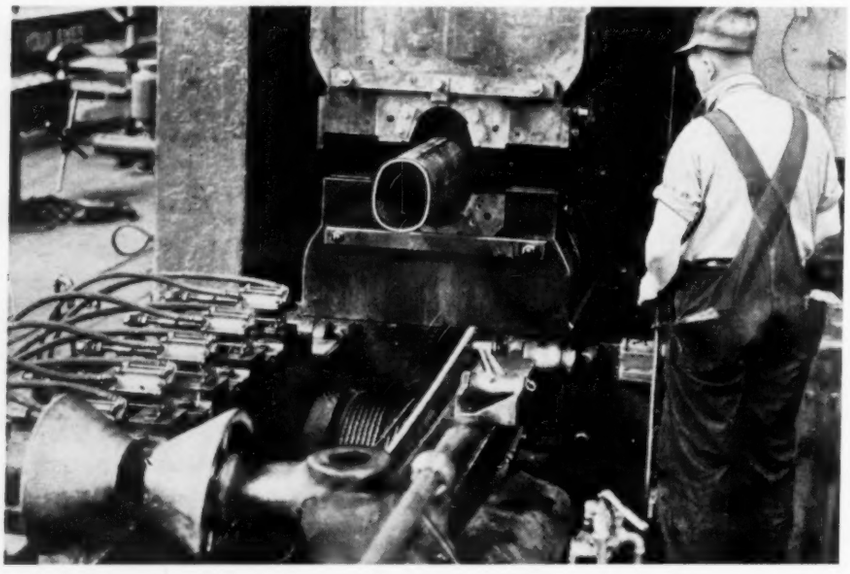
The above is a general statement from the description of its new High Yield casing prepared by the A. O. Smith Corp., Milwaukee. This casing, announced in STEEL for Dec. 30, p. 31, permits the use of a lighter weight section for a specified depth while maintaining the present safety factor, resulting in savings in steel and freight costs. It materially increases the safety factor at any specified depth without increasing the weight, offering added insurance at no extra cost. It allows greater setting depths while maintaining the present safety factor.

Compression Gives Strength

The new casing is made by a new, patented process whereby actual compression of the pipe raises the compression yield point of the steel in the circumferential direction. The process starts with casing pipe which has a larger circumference than the desired finished circumference and which has proportionately thinner walls. This pipe is compressed in the 10,000-ton press, equipped with special dies, shown in the accompanying illustration, to the desired diameter; at the same time the wall thickness is increased to the required dimension.

In one typical case the casing compressed in this press originally had an outside diameter of 7 inches, a wall thickness of 0.362-inch and the steel had a compression yield point of 66,000 pounds per square inch. After effecting a 6¼ per cent reduction in diameter in the press, the outside diameter diminished to 6.562 inches, the wall thickness increased to 0.378-inch and the compression yield point increased to 91,000 pounds per square inch. The original collapse pressure of 5450 pounds per square inch showed an increase to 9150 pounds per square inch. The stress at collapse moved up from 55,300 to 84,000 pounds per square inch.

It is important that the pull-out strength of threaded joints in this casing be made as high as possible, says the Smith company. Couplings used with this casing, therefore, are made by a process which is said to raise materially the normal tension yield point of the steel used.



In this 10,000-ton capacity press, oil well casing of outside diameter of 7 inches and wall thickness of 0.362-inch, undergoes a 6½ per cent reduction in diameter and a proportionate increase in wall thickness. By this compression process the compression yield point is increased from 66,000 to 91,000 pounds per square inch

Discusses Use of Plastics In Redesigning Products

Durez Plastic News, a monthly publication of General Plastics Inc., North Tonawanda, N. Y., made its

initial appearance in December. Its purpose is to acquaint readers with the possibilities for improving products by the use of plastics.

This issue carries descriptive material on cameras, a new bell box, car-door bumpers, knobs and handles, utensils, boxes, toasters, a new clock design, radio cabinets, a mouthpiece for a dictating machine, and a machine for the forming and plating of denture plates in which Durez, a phenolic molding powder, is used.

Stainless Steel Used in Bath Mirror Assemblies

Chromium plated brass frames, and stainless steel clips and shelf brackets are being used by the Miami Cabinet division of Philip Carey Co., Middletown, O., in assembling its various types of dressing and bath room mirrors and cabinets. The mirror-cabinets are made in a wide range of styles and sizes, with cabinets of heavy-gage autobody sheets, reinforced and electrically welded, with baked enamel finish.

Autobody sheets also are used in fabrication of a laundry chute, and in small doors for providing access to plumbing, valves, air shafts, electric wiring and the like. A built-in ironing board with a steel case is another new product of the company. Mounting screws are cadmium plated to resist corrosion.

Ride Control Clamp Uses Live Rubber Block

A ride control comprising fittings which clamp onto the front and rear axles of 1935-6 model Fords is announced by the Burton Auto Spring Corp., Chicago. The control uses the helper principle with a block of live rubber extending out of a sleeve at one end of the clamp against the spring.

Fire box end of miniature locomotive showing throttle reverse lever and steam brake valve

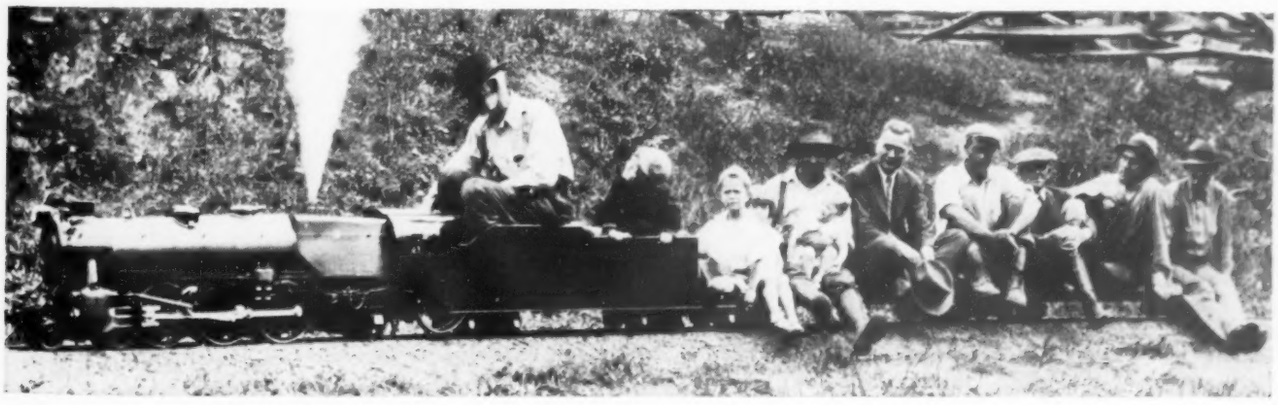
Miniature Locomotive, Operated as Hobby, Is Complete in All Details

BY CALVERT HOLT
Air Reduction Sales Co., New York

AN INTERESTING hobby for young and old is the possession and operation of a miniature locomotive. Because of the considerable outlay of money which is essential to the acquisition and enjoyment of such a hobby, however, it does not seem likely to assume the proportions of a fad.

Altogether there are some 40 of these miniature locomotives in this country. One of the richest men in the East has a locomotive built to a scale of ¾-inch per foot which he operates on a 3½-inch gage track three-quarters of a mile long. At Bedford, N. Y., a 72-year old retired business man gets much enjoyment out of operating a locomotive built to ½-inch scale on 2½-inch gage track 300 feet long.

Undoubtedly the largest of these miniature locomotives is that shown in the accompanying illustrations. This locomotive, together with tender and three flat cars, was constructed by the writer for a young man who



Miniature locomotive, operated as a hobby on one mile of track on an estate in Virginia, weighs 950 pounds and has tractive effort of 250 pounds, or sufficient to pull a load of 5 tons up a 3 per cent grade

operates this equipment on one mile of 7-inch gage track on an estate near Hot Springs, Va. It was built to a scale of 1½ inches to the foot and closely follows passenger engines of the 4-6-2 type operated on the Pennsylvania railroad. The two frames, which were 6 feet long, were formed from ¾ x 5-inch cold rolled steel, by machining, in 108 hours. Later, after the writer had become acquainted with the possibilities of the oxyacetylene method of fabricating, two similar frames were cut out in one hour on a No. 6 Oxygraph machine, with subsequent machining time of 8 hours.

The locomotive shown burns soft coal in a conventional firebox and is controlled by the engineer who sits on the tender. All the valves and levers are in the cab in their customary places. Everything on the locomotive works, including headlight and marker lights. It has steam brakes, pressure oil pump, water pump, two injectors, blower, pressure gage for steam, water gage, cylinder cocks and automatic couplers, and all axles have self aligning ball bearings.

Weight of the engine is 950 pounds and weight of the tender is 200 pounds. The flat cars are 6 feet long each, constituting a very small load. As a matter of fact the locomotive has tractive effort of about 250 pounds, or sufficient to enable it to pull a load of 5 tons up a 3 per cent grade. The young man who operates this locomotive has a machine shop of considerable size where he does all repair and maintenance work.

Dimensions of Engine

Some of the dimensions of this miniature equipment are of interest. Length of the engine is 85 inches and that of the engine and tender together 148 inches. Height of the engine is 23 inches and its width 15 inches. Cylinders are of nickel cast iron, 3 inches in diameter. Piston stroke is 3½ inches. The frame is 72 inches long. Boiler is 11 inches in diameter and is made of copper plate ¼-inch thick. There are 20 copper boiler tubes, ¾-inch in diameter, and 8 copper boiler flues, 1-inch in diameter. There are 8 boiler superheater elements. The boiler has a total heating surface of 23½ square feet. Working pressure is 125 pounds. The piston valve is of cast iron and has four cast iron rings, each 1 5/16-inches in diameter. The Walschart valve gear is made of tool steel with pins hardened.

The cast iron driving wheels are 10 inches in diameter and have steel tires shrunk in place. Truck wheels are 4½ inches in diameter and are of cast iron. The truck frame is of cast iron while all axles are of 1025 S.A.E. steel. Brake shoes are of malleable iron. Brake rigging is of cold rolled steel and the firebox grates are of nickel cast iron.

Welding, etc. . . .

by Robert E. Kinkead

IN THIS column, the author, well-known consulting engineer in welding, is given wide latitude in presenting his views. They do not necessarily coincide with those of the editors of STEEL.

Cry on Own Shoulders

IT IS a safe rule to go by that investment in welding equipment should be written off in three to five years. There are cases in high speed automotive production where the investment must be written off in one year on general principles and no exception is made in the case of welding equipment.

Such a situation is bewildering to the investor who wants to see his capital invested in permanent, tangible, and lasting property. For investors who are befuddled by what is happening in the industrial world, government bonds and farm property are probably the best bet.

Industrialists who are earning large returns are investing their capital in ideas, and they regard the physical property incident to the execution of those ideas as transitory and subject to rapid replacement. Tangible property, to the industrialist, has value only so far as it is capable of producing wealth.

Conceptions of Value

No small part of the lack of common understanding between farmers and industrialists is due to this fundamental difference in conception of what constitutes value. If the farmer cannot produce enough wealth to suit him, he uses the collective voting power of people who live on farms to induce political government to collect what he wants from consumers in the form of tax. The industrialist, on the other hand, employs new ideas, new machinery, new men, to produce what people want at a price they can afford to pay —at a profit. The mental attitude of the two groups is as different as day and night.

In all fairness it should be recognized that there are still industrialists who believe that the world owes them a fair return on an investment they may have made some years ago in physical property such as buildings, machine tools and equipment. To them, the thought is abhorent that value rests in ideas by which physical property may be employed to create wealth. Scrapping usable equipment because it is no longer capable of producing wealth is too great a wrench to their sense of possessiveness. But they have to cry on their own shoulders since they are regarded as merely pikers by the top flight of American industry.

Sparks and Flashes

Welding of high-pressure steam mains of large diameter is one of the most responsible operations ever carried out by welding. Failure would result in loss of life and property damage. Unlike the welding of boiler drums, the end-to-end joints in steam lines are field welding jobs. The welding is done in the sidewise and overhead positions. Many thousands of feet of high pressure steam lines have been welded with no record of failure.

• • •

Practically all the larger penitentiaries have both gas and arc welding equipment which convicts operate. Many men have made a new start because they have learned welding while serving terms. Psychiatrists have considered training in welding an occupational therapy. Our own experience with insane welders is limited to one man who is undoubtedly crazy but does well enough in his work to hold his job.

• • •

An electric carbon arc used for heating the surface of steel, which does not melt or break the surface of the metal, is a recent development. The process is used for hardening the surface of rails at the ends where excessive wear occurs. Control is effected by use of an alternating-current magnetic field.

Photo courtesy of The Heil Co., Milwaukee, Wis.

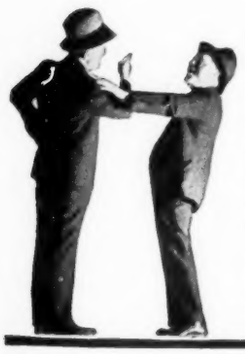
A Quicker March to Market for this "*Shield-Arc*" Welded Furnace

ENDOWED with a gift to save money for its users, this domestic furnace, designed for *"Shield-Arc"* welding, is a piece of merchandise with a selling punch! *"Shield-Arc"* welds replace inner protruding flanges, permit lighter flue sections—give more room for heat transfer and boost the efficiency rating to 85 per cent.

UP go sales and DOWN come costs. What better way is there to profits?

It is significant that such redesign achievements are usually made by people who deal with Lincoln—a trail-blazing organization itself!—A concern whose business it is to keep *"Shield-Arc"* users *always* a step ahead—getting all of the profits of welding progress.

Inquire about the guaranteed savings of *"Shield-Arc"* welding. Start on the road to profits by calling in Welding Headquarters. A Lincoln man near you is at your command without obligation. Or just mail the coupon to THE LINCOLN ELECTRIC CO., Dept. Y -206, CLEVELAND, OHIO. Largest Manufacturers of Arc Welding Equipment in the World.



POP: "Who, me? I feel rosy—two more pounds off the waistline."

LAD: "A trifling obesity diet, Pop. We had a waste-line of old welding machines. Changeover to new, high-capacity *'Shield-Arc's'* took off time, electrodes and power. Reduced our welding bill 25 cents on every dollar. Plenty of men felt rosy after that!"

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☐ Please tell me more about *"Shield-Arc."*
☐ Please send a free copy of the Guide to Better Welding.
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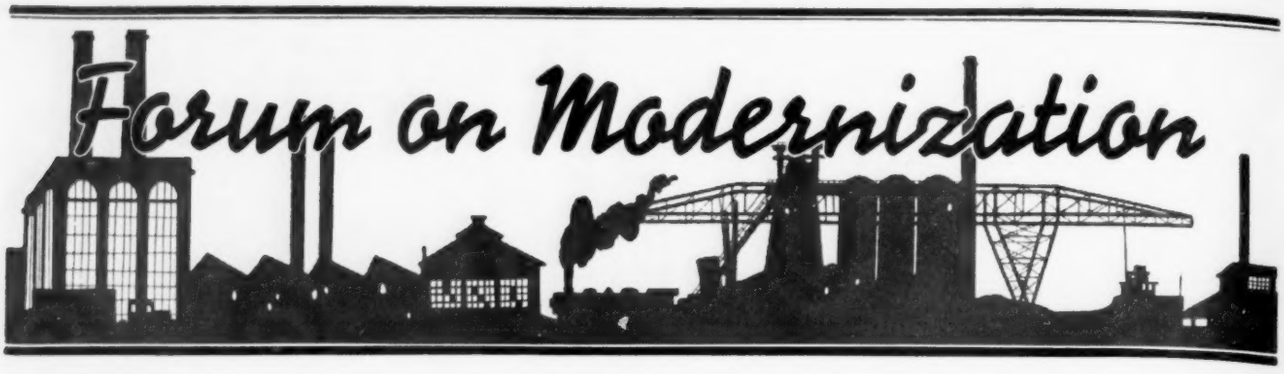


Rebuild the Old or Buy New?—A Question To Be Weighed Carefully

BY W. C. SAYLE
Vice President, Cleveland Punch & Shear Works Co., Cleveland

ONE of the first problems, if not actually the first one, usually confronting the manufacturer who is considering ways and means of increasing production in order to reduce manufacturing costs or who is contemplating redesigning his product to meet competition more successfully is whether it would be better to improve and to some extent modernize his old equipment, or to install new, modern equipment. It is not always an easy matter to convince a manufacturer, especially if he is operating under a limited budget for modernization, that an investment in an entirely new machine is usually much more profitable than having an old machine "made over" at less expense.

Consider Ultimate Results

There is, of course, something to be said in favor of modernizing old equipment under certain circumstances or where the changes are of a minor character. However, where a number of changes are involved it is often not only impractical but in most cases too expensive to incorporate all the important and necessary improvements of the new machine on an old one. Furthermore, in many instances a machine is designed to perform a particular operation or series of operations efficiently and economically and to change it over to meet even a slightly different condition may result in defeating the original purpose and cause production costs to soar out of all proportion to what could be accomplished on a machine designed especially for the purpose.

For example, in our company's line of power presses, we have about 12 distinct types, each of which because of its design, arrangement or size, is particularly fitted to perform a definite operation or operations, as the case may be, and rearranging one of these presses to produce work for which another press is especially designed would, in most cases, prove disappointing as the press would not be nearly as efficient and economical to operate as one which embodied all the essential features necessary for the type of work it is desired to perform. Therefore, I believe that any program of modernization which has for its purpose the conversion or improvement of existing machinery, should only be undertaken after the most careful consideration has been given to developments and improvements in new machinery and this on the basis of the ultimate results to be obtained and not on initial outlay.

Redesigned Dies Save

Within the past few years, a great many metal stamping plants, keenly alive to the changing mode and restricted expenditures, and actuated by the desire to retain their share of any business to be had, found that by redesigning their dies and increasing the size of their presses, they could not only produce a more serviceable, more desirable and more "eye appealing" product, but that they could at the same time eliminate many multiple operations, and by so doing reduce not only the cost in their stamping department but also save time and expense in assembling. This is true not only of products designed for industrial and office use but it is especially true of products used in the home, such as stoves, refrigerators and furniture. The same applies to the automotive industries, where streamlining, appearance and convenience are of paramount importance from a sales point of view.

After careful study and research showed that existing presses were not especially suitable to meet this need, an entirely new type of press embodying many unusual features was developed. While this press is capable of taking the largest rolled sheets and of being operated at comparatively fast speeds, its greatest advantage lies primarily in the fact that its size and design not only permit the accurate production of duplicate parts at the same time but where the size of the stamping is a factor, it can be used to profitable advantage.

Suspension Press Accuracy

This press, known as a four-point suspension press, has two shafts with two connections on each shaft, one connection located at approximately each corner of the slide. This design, in combination with extra long gibs and other features, prevents the slide from tilting either front to back or right to left, and, as perfect alignment is always maintained between the slide and the bed, whether the work is in the center or off center, there is little possibility of dies overlapping. This development not only contributes greatly to the life of the dies but assures extreme and constant accuracy. Such a press not only may be capable of producing the same parts more economically with a lesser die upkeep but it also may contribute to substantial savings in other departments, a point that is sometimes overlooked when considering the question of whether or not to buy new equipment.

Another type of press which introduces a new phase into the steel forging industry is the heavy-duty forging-sizing press. These presses enable the manufacturer to size accurately by pressure, thereby producing superior work at lower cost. To

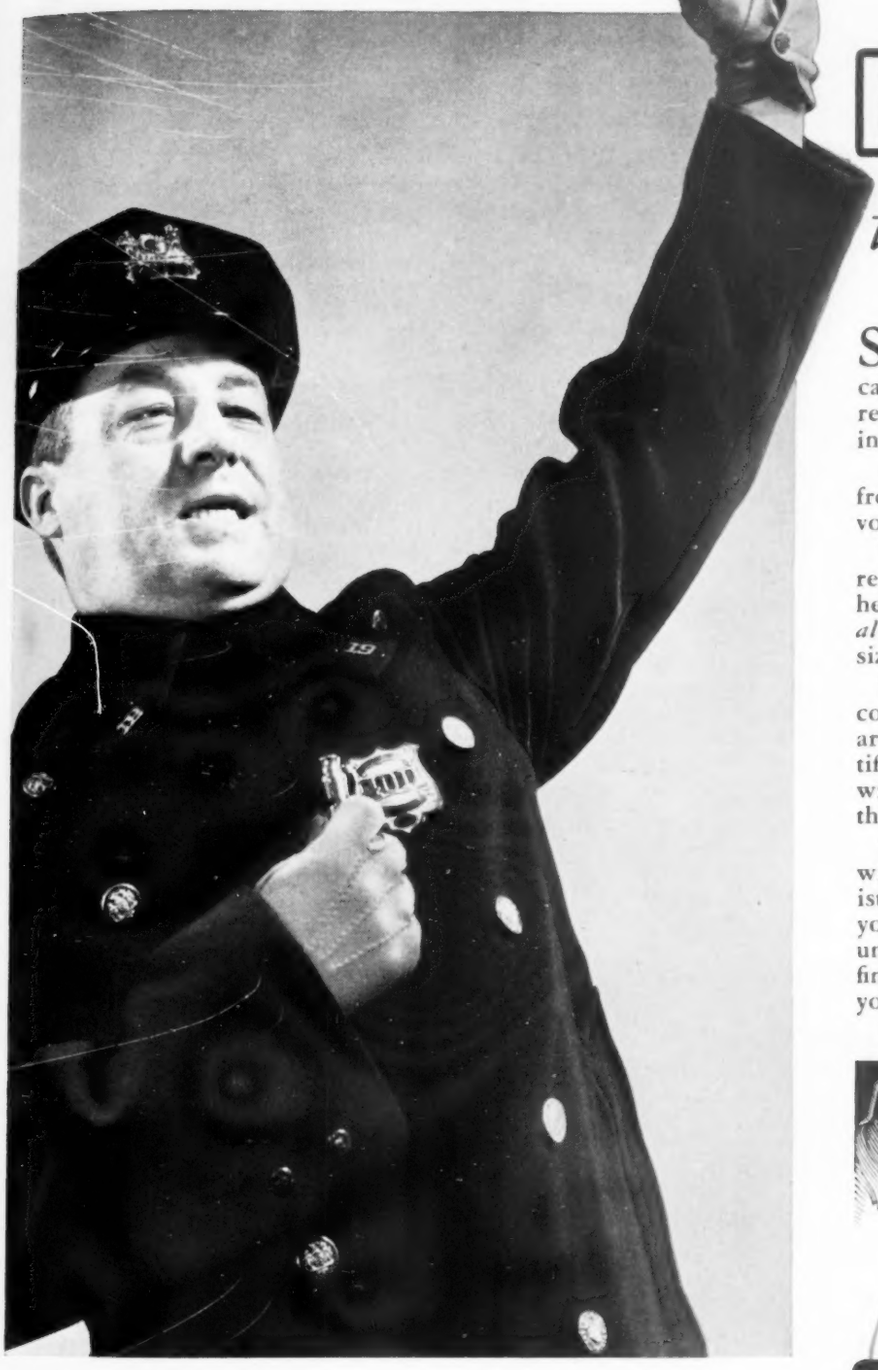
(*Please turn to Page 48*)

AS SIMPLE A THING AS CROSSING A STREET-

needs

CONTROL

to make it safe



SELECTING the steel that is best for your product—that will fabricate most easily and give you best results in service — is a job difficult in itself.

And *getting* that particular steel from one shipment to another, involves still further hazards.

In *Controlled Steels* we offer you a real solution to these problems. For here are plain Carbon Steels in which *all* quality factors — including grain size — are accurately predetermined.

Those "mysterious differences" encountered in ordinary carbon steels are missing . . . eliminated by scientific metallurgical control that starts with the raw materials and follows through in every step of steel making.

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STEELS

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Pacific Coast Representatives: COLUMBIA STEEL CO., *San Francisco*

UNITED STATES STEEL

Progress in Steelmaking

Taps Ash from Boilers

Ash in a molten condition is being tapped from pulverized-coal fired boilers serving a steel plant in the Pittsburgh district. Installation of water walls in the sidewalls not only has decreased the maintenance cost of solid firebrick walls but has increased the rating from 175 to 220 per cent. The furnace bottom slopes toward the tapping hole. Slag is tapped once every 24 hours which lowers the depth of the bath from 18 to 6 inches. Six boilers are tapped by two men in an 8-hour shift whereas for each boiler cleaning period it formerly required eight men three shifts per 24 hours to dig the ash out of the furnace bottom. The tap hole is built of one course of brick 4½ inches wide and six courses 15 inches high. When the slag is to be tapped the top brick is removed, additional brick being removed as the level of the slag lowers. Fly ash is employed to prevent the slag from adhering to the tap hole wall and aids in maintaining a continuous flow of slag. When sufficient slag has been removed the tap hole is cleaned, the brick replaced and fly ash placed inside the tap hole to prevent the slag adhering to the brick surface. The exterior of the tap hole then is sealed with fireclay. This method of removing slag makes it possible to operate the boilers at 300 per cent of their rating.

• • •

Minimizes Size of Building

Ample storage space for coiled stock is provided in the finishing department of a recently completed broad strip mill in a novel manner. A platform made of steel plates is built over the continuous pickling installation thus minimizing the size of the finishing mill building and its overhead and providing many thousand square feet of space for the storage of coils against cold rolling schedules.

• • •

Doors Operated from Crane

Heating furnace and soaking pit doors now can be actuated from the overhead cranes which handle the steel, by the use of photoelectric relays. The doors are controlled merely by flashing a light from the crane thus obviating the necessity for other control circuits in the cab.

• • •

Repairs Are Made Quickly

Rough, worn and broken-out places in concrete floors installed in various departments and shops of iron and steel plants can be repaired easily and quickly by the application of a recently marketed resurfacing material. The product is mixed with portland cement and sand, or sand and crushed stone, according to the purpose for which it is intended. The new material is manufactured from pure hard mineral and contains no solvents, chemical, sludge asphalt or foreign matter. Claim is made that the resurfacer will band to a feather edge, will not disintegrate and will remain smooth under service conditions.

• • •

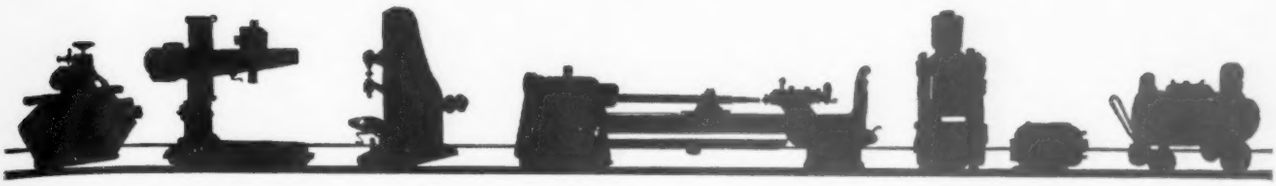
Increases Roll Hardness

Chilled cast iron base rolls now are used chiefly on hot mills producing skelp, plates, strip steel, sheets and tin plates; on cold strip mills of the 4-high type chilled cast and hardened forged steel rolls are widely employed. Chilled cast rolls now have been developed with a surface hardness ranging from 90 to 95 scleroscope and hardened forged steel rolls with a scleroscope hardness of 100 to 110.

Concentrates Stored on Ground Systematically

Whenever any interruptions occur in shipments at the Mesabi Chief mine of the M. A. Hanna Co., Keewatin, Minn., the iron ore concentrates are conveyed to storage by a high-speed stacker—the only one of its kind in the Lake Superior iron ore field. Ground storage capacity served by the stacker is about 95,000 tons. The system includes a shuttle, transfer and stacker conveyor. The outer stacker conveyor, which operates horizontally from a turntable until the storage pile is 50 feet high, can be moved into other positions by pulling on a steel cable. As shown in the illustration two grades of ore are stored in separate piles. The 80-ton steel structure was built by the Link-Belt Co., Chicago

New Equipment



Rear Arch for Horizontal Return Tubular Boilers—

Geo. P. Reintjes Co., Kansas City, Mo., has adapted its standard wall tiles for use as rear arches on horizontal return tubular boilers. The design is such that each tile is individually hung by an independent casting from a pipe. Infiltration of excess air is prevented by the placing of a standard 9-inch fire brick between each pair of tiles, yet freedom of expansion and contraction is provided for. Advantage of the flat suspended arch is to provide turbulence in the gases so that all of the boiler tubes receive an equal proportion of the hot gases.

♦ ♦ ♦

Stationary Feedwater Heater

Worthington Pump & Machinery Corp., Harrison, N. J., is announcing a thoroughly modernized nondeaerating type stationary feedwater heater, shown herewith. Features include an interchangeable pan system which provides a definite and unchanging flow of water in jets and drops, exposing maximum surfaces to the steam. Water is heated to within 2 degrees Fahr. of the saturated steam temperature within the heater. Mutibaffle separators assure oil-free feedwater. A two-pass filter removes all suspended solid matter. Pump suction openings are provided on two sides of the heater for convenience of piping hook-up. An improved noncollapsible ball-float trap takes care of overflow, and the proper water level is maintained by a special type open bucket float.

Worthington feedwater heater utilizes waste heat

♦ ♦ ♦

Die Sinking Machine—

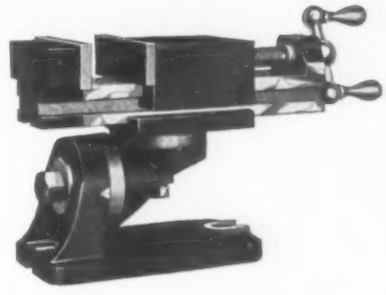
Mall Tool Co., 7740 South Chicago avenue, Chicago, offers a one-half horsepower continuous duty counter-shaft driven flexible shaft machine equipped with speed combinations for any particular grinding or cutting application. Speed variations from 850 to 14,000 revolutions per minute can be secured. The unit, shown herewith, can be fitted with rotary files or shaped grinding wheels for cutting hard or soft materials including brass, bronze, bakelite, aluminum, porcelain, glass, hardened or soft steel and rubber. It is recommended for die shops, pattern shops, toolrooms, foundries, etc.

Mall flexible shaft machine

♦ ♦ ♦

Horizontal Universal Vise—

Covel Mfg. Co., Benton Harbor, Mich., is announcing a No. 97-1600 horizontal universal vise. Predetermined angles and clearances in both directions can be produced accurately with this unit, shown herewith. The top part of the vise, fastened to a universal bracket with a tee slot bolt, can be moved, turned around or quickly removed entirely. All surfaces are ground to squareness and carefully graduated in degrees so as to hold a piece in any desired position. Angle adjustments are locked by hardened nuts and the vise can be used on a surface grinder, milling machine, drill press, or a shaper, with normal cuts, without moving the work or adjustment. It has a capacity of 4 inches with hardened steel jaws in place, and 5 inches with jaws removed. Jaws are 4½ inches wide and 1½ inches high.



Covel horizontal universal vise

♦ ♦ ♦

Current Input Controller for Furnaces, Ovens, Etc.—

Automatic Temperature Control Co., 34 East Logan street, Philadelphia, has introduced a new current input controller, shown on page 45, for furnaces, ovens, platens and other electrically-heated units. Four standard models have been designed to meet various requirements. Model M is designed to prevent a constant load from rising in temperature beyond a desired and readily adjusted setting. Model MT exercises the same control of overshooting as model M but, in addition, is provided with built-in time control which brings input control into action after an adjustable period. Models F and FL are designed for control where loads are variable. Both adjust automatically to changes in demand, with model F serving installations having but slight lag in furnace response, and model FL serving where lag is greater.

With continuous furnaces, where furnace load is constant, model M input controller is used, wired in series

DO YOU MAKE PARTS?

Only NATIONAL-SHELBY Seamless Tubing combines these Advantages

To PROTECT the quality of your product—to keep your fabrication costs low—be sure to specify NATIONAL-SHELBY Seamless Mechanical Tubing, always.

For NATIONAL-SHELBY offers you three advantages combined in no other Seamless Mechanical Tubing—

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Whether you make parts as big as a Diesel engine cylinder or as small as a hypodermic needle, make them of NATIONAL-SHELBY Tubing. It's available in practically any size and wall thickness—and in round, square, rectangular and oval shapes. We can help you by suggesting the right grade and treatment of steel, the most economical form to fit your needs.

Send your blue prints or specifications to NATIONAL TUBE COMPANY, Pittsburgh, Pa.

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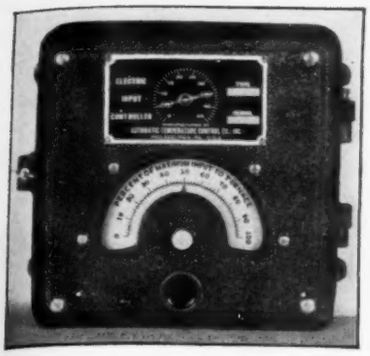
UNITED STATES STEEL



Current input controller built by Automatic Temperature Control Co.

with low pyrometer contact. One setting of the input controller then governs current input so that the charge is held at the desired temperature. In the case of variable load, model F or FL is employed, so wired that the rate of current input is decreased or increased automatically by the high and low contacts of the actuating pyrometer. Choice between the two models is made in accordance with lag characteristics of the furnace and heat control equipment. These current input controllers also provide improved temperature regulation for batch heating in the heating-up period, in the soaking stage, or both, as required. They have a broad field of usefulness when used to replace rheostats in control of laboratory equipment.

♦ ♦ ♦

Industrial Mounting for High-Intensity Mercury Lamps—

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is marketing several new lighting fixtures for industrial lighting, using the new 400-watt high-intensity mercury lamp. The high, medium and low mounting reflectors of aluminum are suitable for mounting heights of 18 feet or more; the new one-piece Glassteel diffuser is designed for mounting heights of less than 18 feet.

The high mounting reflectors, shown herewith, are made from commercially pure "etching grade" aluminum sheet. Their shape is such as to make them especially strong and durable after fabrication. Reflectors are supplied for ½-inch conduit mounting. A cast aluminum cap has a left-hand thread which permits tightening of both cap and reflector on conduit.

The 24-inch high-intensity Glassteel diffusers are drawn from Armco iron and are finished with one ground coat and two white coats of porcelain enamel inside and outside. This reflector uses the same socket and holding construction as the aluminum reflectors.

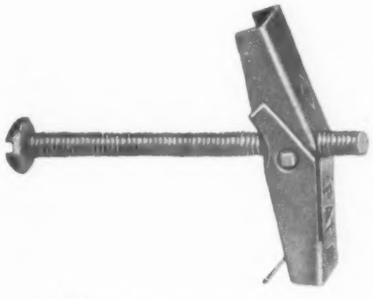
Westinghouse aluminum reflector for industrial lighting

♦ ♦ ♦

Insulating Pipe End or Bushing—

Adalet Mfg. Co., 1448 East Fortyninth street, Cleveland, is marketing new pipe ends or insulating bushings made from a special phenolic laminated product having both mechanical and dielectric strength. These units, one of which is shown herewith, are designed to prevent disastrous grounds and are recommended for use on all conduits terminating at switchboards, control boards, power cabinets, motor start-

Adalet insulating pipe end or bushing



Diamond spring toggle

ers, controllers, etc. When mounted on the conduit they can be tightly secured with a standard pipe wrench. Laminated disk type covers can be installed in all bushings at free pipe terminals to prevent dust or foreign matter entering the conduit.

♦ ♦ ♦

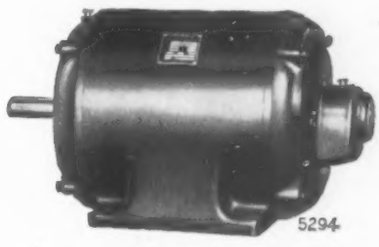
Spring Toggle—

Diamond Expansion Bolt Co. Inc., Garwood, N. J., is announcing a new spring toggle for making attachments to hollow brick, tile or lath walls. The device, shown herewith, consists of two wings that engage a trunnion nut and a spring which forces the wings outward when the head has passed through the wall. Each wing is a complete toggle in itself, forming a bridge with bearing on both sides of the hole.

♦ ♦ ♦

Single-Phase Motor—

Emerson Electric Mfg. Co., St. Louis, recently brought out a type SR single-phase motor, shown herewith. At the present time 1725 r.p.m. motors have been developed in the following ratings: 1, 1½, 2 and 3 horsepower. The unit has an armature with both a squirrel cage winding and a repulsion or commuted winding. Both windings operate as such at all times; the commutator of the repulsion winding is not short circuited as the motor attains speed and the squirrel cage is not opened at slow or starting speeds. The starting action is smooth and steady. The starting commutation is excellent; there is no heavy sparking with resultant pitting of the commutator. As a result of these characteristics the SR motor is ideal for starting and bringing to speed sustained heavy starting loads, such as an air compressor at low temperatures which



Emerson SR single-phase motor

congeal the oil. The SR motor maintains its initial starting torque steady and evenly.

♦ ♦ ♦

Three New Shovels—

Thew Shovel Co., Lorain, O., is announcing three new shovel models. Shown in the illustration on page 46, these units comprise a 2 yard, a 1-yard unit and a ¾-yard truck shovel. The 2-yard model is equipped with a 24-foot shovel boom. The company points out that this member is virtually two booms in one—one a structural member that absorbs all bending and compression forces, and the other a tubular torsional member which absorbs and resists all boom twisting and torsional stresses. The 18-foot dipper stick is made of seamless tubing. The new 1-yard model has a 19-foot boom and is powered by a 4-cylinder diesel engine. Its crane capacity is 15 tons at 12-foot radius. The ¾-yard truck shovel is mounted on a three-axle type truck with 10 pneumatic tires. The company

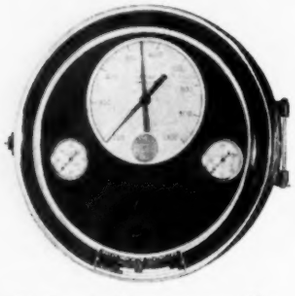
Three new Thew shovels

calls attention to the fact that ¾-yard capacity in a truck shovel is a new idea in the field of mobile equipment.

♦ ♦ ♦

Air-Operated Indicator Controller—

Bailey Meter Co., 1050 Ivanhoe road, Cleveland, announces that for pressure and temperature control applications not requiring a record of



Bailey indicator-controller

the factor under control, it has developed an indicator-controller which may operate either a diaphragm motor valve or an air-operated control drive. This device, shown herewith, incorporates an indicating pointer and scale graduated to measure the factor under control. A second pointer indicates the standard for which the controller is set so that the two pointers coincide when the controller is in operation. Standard setting may be changed to any desired point by turning a knurled knob located under the indicating dial. An adjustment also is provided whereby the sensitivity or "control range" may be varied from 1 to 1000 per cent of the measuring range.

♦ ♦ ♦

Thimble for Wire Rope Slings

Macwhyte Co., Kenosha, Wis., is introducing a new type of thimble for wire rope slings. The same size of thimble, shown herewith, is employed on both ends of the sling and yet either thimble passes freely through the other, making it possible to use the same sling for both choker and basket hitches. Either end of the sling may be attached to the crane hook. By using first one end and then the other, two wearing points in the body of the sling are provided. When two sizes of thimbles are required, there can be only one wearing point. Another feature of these new thimbles is the fact that there is no seizing to cover up the rope in the thimble.

Macwhyte thimble for wire rope slings

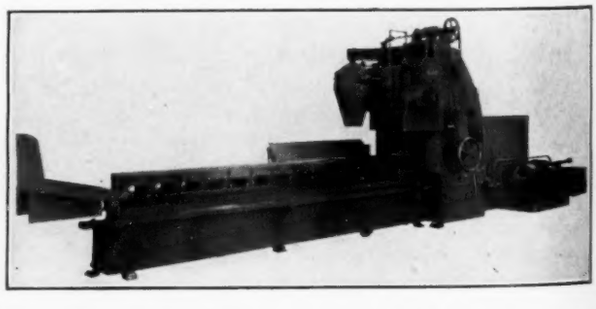
♦ ♦ ♦

Grinding Machine—

Hill Clutch Machine & Foundry Co., Cleveland, has developed what is claimed to be a new departure in grinding shear blades and flat surfaces through use of a vertical spindle and compact construction of vertical column and spindle mounting. The machine, shown herewith, will grind flat surfaces to within 0.0005-inch, and provision is made for tilting the head to grind concaves within the maximum periphery of the grinding wheel. The machine will grind work up to 22 inches wide, and in lengths from 7 feet 2 inches to 18 feet. The maximum distance between the face of the grinding wheel and the platen is 25 inches.

The table of the machine is hydraulically driven, and the speed is instantly variable from 0 to 90 feet per minute. The wheel used is a 26-inch section.

Wheel head of this Hill grinding machine can be tilted to grind concave within the maximum periphery of the grinding wheel



Machinery Auction Reveals Increasing Price Trend

(*Concluded from Page* 13)

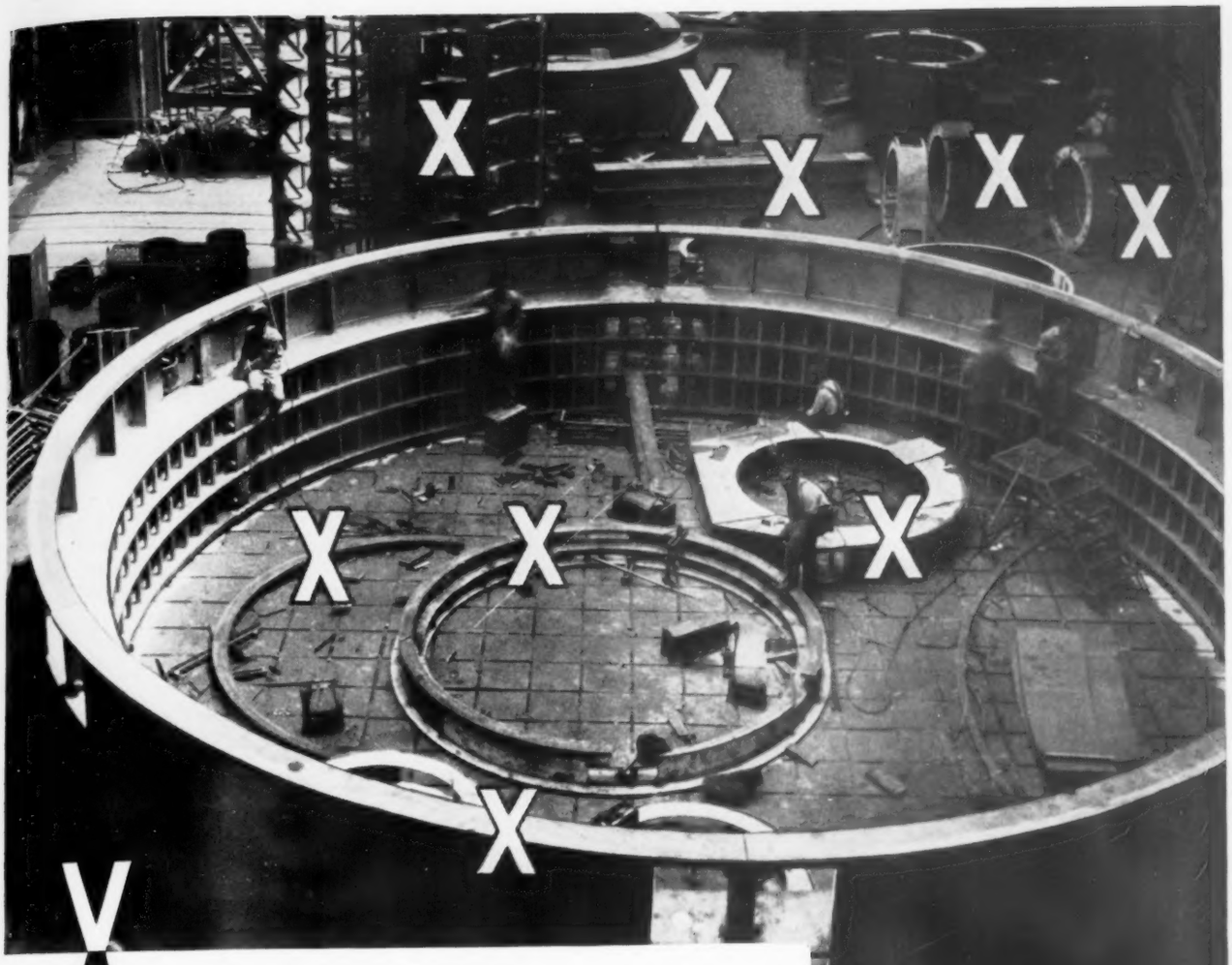
crometer caliper, range 20 to 24 inches, with lock nut, ratchet, stop and four standards (in case), which went for $35. Large assortments of high speed drills went at prices ranging from 14 to 50 cents each. Assorted sizes of reamers went at 15 to 20 cents each, and a reamer set, manufactured by the Cleveland Twist Drill Co., Cleveland, (reamers ranging from ½ to 1 15/16 inches, in 21 individual cases), was purchased for $31. Twelve high speed milling cutters went for $1.05 each.

One lot not listed involved 12 new automatic electric hand drills. These cost $36.50 each and were sold at less than half, $18, to a Rochester, N. Y., dealer.

A Peerless 24-inch high speed heavy duty hack saw brought $157.50; a 42-inch steel hand bending roll, $45; a Buffalo Forge No. 5 portable punch and shear, $22; a Hoefer 24-inch floor drill, with chuck, $22; a Rogers No. 5 36-inch band saw, with 36 by 36-inch iron table top, $25; and an Oster 4-inch pipe threader, $40. A Dill 18-inch slotter, with 34-inch rotary table and with power feed in various directions, brought $325, a Greaves Klusman 20-inch by 12-foot screw cutter, $100; and a Gisholt turret lathe, 6-inch hole, $310.

A Gould & Eberhardt 32-inch shaper with force feed lubrication, Bullard 84-inch vertical boring mill, a Putnam 42-inch vertical boring mill, a Bullard 24-inch vertical turret lathe, and a Defiance No. 5 horizontal boring mill were included in equipment listed.

A heavy duty double end grinder, a 20-inch by 10-foot screw cutting engine lathe, a 20-inch floor drill, a 3½-inch pipe cutter were among the relatively few items offered, without satisfactory bids being submitted.



X MARKS THE SPOT!

. . . where welded Rolled Steel gives greater strength with less weight . . . at lower cost.

WE do not claim that Rolled Steel, flame-cut and arc-welded, can be applied economically to *all* machine construction. But we do know this: that in an amazing number of applications this modern manufacturing process has demonstrated its ability to produce a higher-quality job, at lower cost, than any method hitherto employed.

In building heavy machinery and special equipment this is particularly true. Here, the adaptability of rolled steel construction offers the machine designer an ever-widening field of use. For with rolled steel he deals with a material of known strength. He can discard all excess weight and bulk—place his stiffening and wearing members where he wants them. He can simplify and improve appearance—quickly and inexpensively alter design if necessary. At the same time inventory can be reduced—production costs drastically lowered—the time from drawing board to finished job speeded up—quicker deliveries made possible.

THIS BOOK IS YOURS

Prepared by practical men—to answer your questions about Rolled Steel. Tells how weight is affected . . . what savings are possible . . . what types of steel are best suited . . . includes suggestions on economies in buying . . . explains modern shop technique. Send for your copy today.

CARNEGIE-ILLINOIS STEEL CORPORATION - *Pittsburgh, Chicago*
COLUMBIA STEEL COMPANY - - - - - *San Francisco*
TENNESSEE COAL, IRON & RAILROAD COMPANY - *Birmingham*

UNITED STATES STEEL

New Trade Publications

Stainless Steel—National Tube Co., Frick building, Pittsburgh. Bulletin F187020, containing full description of 18-8 FM stainless steel.

Arc Weld—Lincoln Electric Co., Cleveland. A. I. A. file No. 13c2 describing arc-welded tier buildings and design of welded girders, with proportions, formulas and drawings.

Boilers—E. Keeler Co., Williamsport, Pa. A bulletin, F8, introducing and describing a new development in steam boiler construction, the Keeler type CP water tube boilers.

Controllers—Brown Instrument Co., Wayne and Roberts avenues, Philadelphia. A folder describing and illustrating the Brown air-operated controllers.

Meters—Worthington-Gamon Meter Co., Newark, N. J. A bulletin, M-975-B30, describing and illustrating a disc water meter, listing features, prices, parts, and dimensions.

Paints—International Paint Co., 21 West street, New York. A 9-page booklet on Tanctectol, a paint used for protection of gasoline and oil storage tanks, depicting its uses and features.

Screens—Universal Vibrating Screen Co., Racine, Wis. A bulletin, depicting by description and illustration, the features of this company's vibrating screens.

Flexible Shafts—N. A. Strand & Co., 5001-5009 North Lincoln street, Chicago. A 64-page catalog, No. 26, devoted to prices, description, and illustration of this company's flexible shafts and equipments.

Handling Equipment—Jeffrey Mfg. Co., Columbus, O. Catalog No. 417, covering chains, sprockets, transmission machinery, spiral conveyor, elevator and conveyor parts, with specifications and prices.

Handling Machinery — Palmer-Bee Co., 1753 Poland avenue, Detroit. Section No. 106 of new general catalog No. 100, with complete description of bulk handling machinery for use in elevating and conveying installations.

Industrial Diamonds—J. K. Smit & Sons Inc., 157 Chambers street, New York. Volume 1, No. 7, describing economic features of Dykon gage and the Sta-Kool diamond holder, with a report on the diamond market.

Plating Equipment — Frederic B. Stevens Inc., Larned and Third streets, Detroit. Nineteen pages of illustration, blue printing and examples of this company's plating equipment and supplies.

Presses—John Robertson Co. Inc., 121-135 Water street, Brooklyn, N. Y. A booklet devoted to lead sheath stripping machines, lead encasing presses, lead pipe extrusion outfits, lead encasing die-block, and solder wire press.

Maintenance—Metropolitan Life Insurance Co., 1 Madison avenue, New York. A report entitled "The Maintenance Department," containing suggestive comments on production, practices and procedures, organization, operation and control, compiled from a survey of several representative companies.

Regulators — Minneapolis-Honeywell Regulator Co., Minneapolis. Bulletin SA-543-50M 10-35 on Chronotherm control, with description and illustration of this device for leveling heat.

Stainless Steel—Joseph T. Ryerson & Son Inc., Chicago. Display of Allegheny stainless features, with examples of the product, including illustrations of plate, sheet, strip and bars, tubing and pipe, wire, bolts, etc.

Steel Houses—Insulated Steel Construction Co., Middletown, O. A folder describing details of construction and advantages of prefabricated steel houses of frameless structure, with plans for eight typical designs.

Steel Mill Conveyors—Logan Co., 535 Buchanan street, Louisville, Ky. Catolog No. 10 containing information, photographs, sketches and engineering data on this phase of the company's products.

Valves—Edward Valve & Mfg. Co., East Chicago, Ind. A bulletin entitled "Valve Values," with descriptive literature on valves for throttling, nonreturn valve criteria, and specialty relief valves.

Copper Molybdenum Iron—Republic Steel Corp., central alloy district, Massillon, O. Form ADV. 148 50M-10-35 containing a fund of information on Toncan alloy iron, with complete description on the physical properties and constants.

Interchangeable Machinery — Dumore Co., Racine, Wis. A 22-page booklet, entitled "One Ten thousandth of an Inch," concerning precision in tools, horsepower motors and grinders, with history, illustration and uses of interchangeable machinery.

Pumps—Pomona Pump Co., 206 East Commercial street, Pomona, Calif. Bulletin 16-B, containing 32 pages of informative material, diagrams, illustrations, and examples of industrial uses for this company's products.

Pumps—Worthington Pump & Machinery Co., Harrison, N. J. Two folders, L-400 B7 3511 and W-101-B1A, which consider respectively, the multi-V-drive with Goodyear emerald cord belts, and horizontal duplex piston pumps.

Lacquers—Roxalin Flexible Lacquer Co., 800 Magnolia avenue, Elizabeth, N. J. An unusual booklet containing information on the Blue Knight Blax finish and Leaflex (MV) for maintenance, aluminum finish, and silver and brass lacquers.

Machinery and Tools—Brown & Sharpe Mfg. Co., Providence, R. I. Catalog No. 140 containing a complete listing, with specifications, of this company's milling machines, grinding machines, machinists' tools, arbors, collets and adapters, and other miscellaneous equipment.

Electric Tools—Independent Pneumatic Tool Co., 600 West Jackson boulevard, Chicago. Catalog No. 60 devoted to complete showing of attachments for electric screw driving and nut setting, specifications and illustrations of Thor line of high frequency electric tools, and a section pertaining to Universal electric tools.

Forum on Modernization

(*Concluded from Page* 40)

give a permanent coldset to a forging, powerful and rigid presses are absolutely necessary and old fashioned light presses or badly worn presses cannot be depended upon to operate satisfactorily nor with sufficient accuracy. On this new type of heavy-duty press, the forgings are produced with such precision that it is only on the finest fitting surfaces that any machining is necessary.

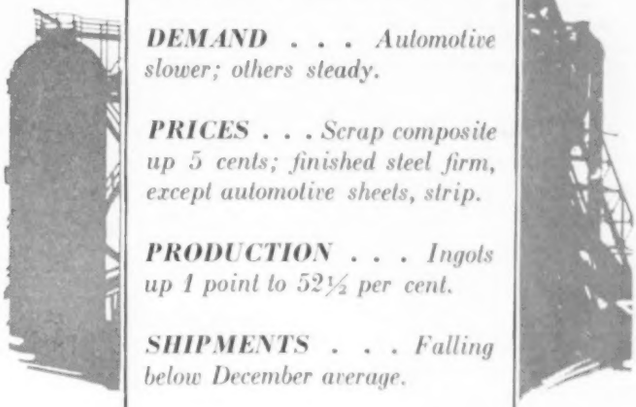
These are but two examples of what is taking place in the power press industry and while no one but the individual manufacturer can state with any definite assurance when it is profitable to buy equipment of the latest design, it is obvious that manufacturers who have modern equipment such as the foregoing, have a decided advantage over other manufacturers, not only from the standpoint of economy of production but also from the standpoint of sales appeal.

However, improvements and new methods have not been entirely confined to production machinery, and it will be of interest to many to learn that even iron chips which were formerly more or less a source of annoyance and expense to the manufacturer, are now being profitably compressed into briquets through the development of a briqueting machine. This machine compresses the chips into such a size that they can be used readily in the cupola along with scrap, pig iron and other material and without exceeding the standard melting loss, thereby eliminating the necessity of selling the chips or otherwise disposing of them.

The profitable advantage of buying new equipment, therefore, should not be determined simply on the basis of the initial outlay—large or small as that may be—but rather on what the savings in manufacture the equipment will effect and whether or not the improvement in the product will stimulate sales. No one will gainsay that old worn out equipment is usually a heavy liability and should be replaced, but it is also true that even equipment which is still capable of being operated can be just as heavy a liability if it has been superseded by better and more efficient design.

January Below December, First Time Since '21

Output Restricted by Lag In Automobiles; Others Holding Up; Scrap Rises



MARKET IN TABLOID

DEMAND . . . *Automotive slower; others steady.*

PRICES . . . *Scrap composite up 5 cents; finished steel firm, except automotive sheets, strip.*

PRODUCTION . . . *Ingots up 1 point to 52½ per cent.*

SHIPMENTS . . . *Falling below December average.*

ALTHOUGH steelworks operations last week advanced 1 point to 52½ per cent, the improvement so far this month is less than steelmakers anticipated, and it has become apparent December's record was attained at the expense of January.

An operating rate of 62 per cent in each of the two remaining weeks of this month would be necessary for January merely to equal the 55.6 per cent average of December—and barring an unforeseen bulge in new commitments this is improbable. It is the first time since the depression year 1921 when steel production in January failed to exceed that of the preceding month. The rise in the operating rate since Jan. 1 is 3 points, while last year in the same period it was 8½.

Curtailment in new steel commitments is restricted mainly to the automobile industry which last week reduced assemblies 3000 units to 95,000, or 8600 below the high point in November-December. The decline in production is expected to continue until late February or early March. It is less noticeable in the low-price class than in the higher, and the industry as a whole still is confident that this year total assemblies will be at least 10 per cent above 1935.

While for the present, steel appears to be under a severe handicap from the loss of automobile tonnage, in other directions the markets still exhibit considerable buoyancy, and STEEL's scrap price composite, after remaining stationary for four consecutive weeks, has again advanced, on a moderate amount of buying.

Practically no reaction has been experienced in steel from the AAA decision, the farm implement industry operating at 75 to 90 per cent of normal—the 1928-30 average—with orders in hand to continue so for six months, and dealers stocking more extensively than in several years.

Manufacturers' wire demand and buying of wire products are at the highest rate for any January since 1929. Steel bar specifications this month are larger than in the comparable December period, aided by heavier orders from machinery and equipment builders. Tin plate is fairly strong, but releases for sheets and strip are definitely lower, resulting from the letdown in automobiles. Sheet and strip price concessions, first granted to Michigan automobile manufacturers, have been extended to partsmakers. Automobile manufacturers offered to supply partsmakers with lower-cost material.

Purchasing of plain structural material has improved. Structural shape awards of 100 tons or more in the week increased to 26,841 tons. Los Angeles has awarded 31,500 tons of plates for a welded pipe line and 6000 tons of reinforcing steel for concrete pipe, in the Colorado river aqueduct system. The navy has purchased 2300 tons of plates.

Southern Pacific placed 40,769 tons of rails and 9500 tons of accessories; Illinois Central, 7600 tons of rails; Southern, 3000 tons of rails and 1800 tons of fastenings. Chesapeake & Ohio is in the market for 7000 tons of steel to repair 1700 hopper cars. Pullman Standard Car Export Corp., New York, has booked 400 box cars for the Paulista railway, Brazil. New Haven has ordered 10 diesel-electric locomotives.

In raw materials, merchant pig iron and foundry coke consumption are near the December levels. From Russia, 483 tons of spiegeleisen and 3579 tons of pig iron have arrived at Philadelphia.

Youngstown steelworks operations last week advanced 2 points to 64 per cent; Pittsburgh 1 to 41; Chicago 1 to 52½; eastern Pennsylvania 1½ to 37; Cleveland 7 to 67; New England 10 to 93. Buffalo was down 5 to 45, and others unchanged.

STEEL's iron and steel price composite rose 1 cent to $33.34, the finished steel index held at $53.70, while the scrap composite increased 5 cents to $13.17.

COMPOSITE MARKET AVERAGES

	Jan. 18	Jan. 11	Jan. 4	One Month Ago Dec., 1935	Three Months Ago Oct., 1935	One Year Ago Jan., 1935	Five Years Ago Jan., 1931
Iron and Steel	$33.34	$33.33	$33.31	$33.31	$32.84	$32.58	$31.69
Finished Steel	53.70	53.70	53.70	53.70	53.70	54.00	49.30
Steelworks Scrap	13.17	13.12	13.12	13.17	12.72	12.03	10.49

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Jan. 18, 1936	Dec. 1935	Oct. 1935	Jan. 1935
Steel bars, Pittsburgh	1.85c	1.85	1.85	1.80
Steel bars, Chicago	1.90	1.90	1.90	1.85
Steel bars, Philadelphia	2.16	2.16	2.16	2.09
Iron bars, Terre Haute, Ind.	1.75	1.75	1.75	1.75
Shapes, Pittsburgh	1.80	1.80	1.80	1.80
Shapes, Philadelphia	2.01½	2.01½	2.01½	2.00½
Shapes, Chicago	1.85	1.85	1.85	1.85
Tank plates, Pittsburgh	1.80	1.80	1.80	1.80
Tank plates, Philadelphia	2.00	1.99	1.99	1.98½
Tank plates, Chicago	1.85	1.85	1.85	1.85
Sheets, No. 10, hot rolled, Pitts.	1.85	1.85	1.85	1.85
Sheets, No. 24, hot ann., Pitts.	2.40	2.40	2.40	2.40
Sheets, No. 24, galv., Pitts.	3.10	3.10	3.10	3.10
Sheets, No. 10, hot rolled, Gary	1.95	1.95	1.95	1.95
Sheets, No. 24, hot anneal., Gary	2.50	2.50	2.50	2.50
Sheets, No. 24, galvan., Gary	3.20	3.20	3.20	3.20
Plain wire, Pittsburgh	2.30	2.30	2.30	2.30
Tin plate, per base box, Pitts.	5.25	5.25	5.25	5.25
Wire nails, Pitts	2.40	2.40	2.40	2.60

Semifinished Material

Sheet bars, open-hearth, Youngs.	$30.00	30.00	28.00	28.00
Sheet bars, open-hearth, Pitts.	30.00	30.00	28.00	28.00
Billets, open-hearth, Pittsburgh	29.00	29.00	27.00	27.00
Wire rods, Pittsburgh	40.00	40.00	38.00	38.00

Pig Iron

	Jan. 18, 1936	Dec. 1935	Oct. 1935	Jan. 1935
Bessemer, del. Pitts.	$20.8132	$20.8132	$19.8132	$19.76
Basic, Valley	19.00	19.00	18.00	18.00
Basic, eastern, del. eastern Pa.	20.8132	20.8132	19.8132	19.76
No. 2 fdry., del. Pitts.	20.3132	20.3132	19.3132	19.26
No. 2 fdry., Chicago	19.50	19.50	18.75	18.50
Southern No. 2, Birm.	15.50	15.50	14.50	14.50
Southern No. 2 del. Cincinnati	20.2007	20.2007	19.2007	19.13
No. 2X eastern, del. Phila.	21.6882	21.6882	20.6882	20.63
Malleable, Valley	19.50	19.50	18.50	18.50
Malleable, Chicago	19.50	19.50	18.75	18.50
Lake Sup. charcoal, del. Chi.	25.2528	25.2528	24.8728	24.04
Ferromanganese, del. Pitts.	90.13	90.13	90.13	89.79
Gray forge, del. Pitts.	19.6741	19.6741	18.6741	18.63

Scrap

Heavy melting steel, Pittsburgh	$14.50	14.05	13.65	13.50
Heavy melt. steel, No. 2, east. Pa.	11.25	11.25	11.00	9.71
Heavy melting steel, Chicago	13.50	13.35	12.50	12.15
Rails for rolling, Chicago	14.25	14.50	14.00	12.90
Railroad steel specialties, Chicago	14.25	14.25	13.50	13.40

Coke

Connellsville, furnace, ovens	$3.50	3.55	3.55	3.60
Connellsville, foundry, ovens	4.00	4.10	4.35	4.60
Chicago, by-product foundry, del.	9.75	9.75	9.75	9.25

Steel, Iron, Raw Material, Fuel and Metals Prices

Except when otherwise designated, prices are base, f.o.b. cars. Asterisk denotes price change this week

Sheet Steel

Hot Rolled No. 10, 24-48 in.

Pittsburgh	1.85c
Gary	1.95c
Chicago, delivered	1.98c
New York, del.	2.20c
Philadelphia, del.	2.16c
Birmingham	2.00c
St. Louis, del.	2.18c
Pacific ports, f.o.b. cars, dock	2.40c

Hot Rolled Annealed No. 24

Pittsburgh	2.40c
Gary	2.50c
Chicago, delivered	2.53c
Detroit, delivered	2.45c-2.60c
New York, del.	2.75c
Philadelphia, del.	2.71c
Birmingham	2.55c
St. Louis, del.	2.72c
Pacific ports, f.o.b. cars, dock	3.05c

Galvanized No. 24

Pittsburgh	3.10c
Gary	3.20c
Chicago, delivered	3.23c
Philadelphia, del.	3.41c
New York, del.	3.45c
Birmingham	3.25c
St. Louis, del.	3.43c
Pacific ports, f.o.b. cars, dock	3.70c

Tin Mill Black No. 28

Pittsburgh	2.75c
Gary	2.85c
St. Louis, delivered	3.08c

Cold Rolled No. 10

Pittsburgh	2.50c
Gary	2.60c
Detroit, delivered	2.55c-2.70c
Philadelphia, del.	2.81c
New York, del.	2.85c
Pacific ports, f.o.b. cars, dock	3.10c

Cold Rolled No. 20

Pittsburgh	2.95c
Gary	3.05c
Detroit, delivered	3.00c-3.15c
Philadelphia, del.	3.26c
New York, del.	3.30c

Enameling Sheets

Pittsburgh, No. 10	2.50c
Pittsburgh, No. 20	3.10c
Gary, No. 10	2.60c
Gary, No. 20	3.20c

Tin and Terne Plate

Gary base, 10 cents higher.

Tin plate, coke base (box) Pittsburgh	$5.25
Do., waste-waste	2.75c
Do., strips	2.50c
Long ternes, No. 24 unassorted, Pitts.	3.40c
Do., Gary	3.50c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	23.00	24.00
Plates	26.00	28.00
Sheets	33.00	35.00
Hot strip	20.75	22.75
Cold strip	27.00	29.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	17.00	18.50	21.00	26.00
Plates	20.00	21.50	24.00	29.00
Sheets	25.00	28.00	31.00	35.00
Hot strip	15.75	16.75	21.75	26.75
Cold strip	20.50	22.00	27.00	35.00

Steel Plates

Pittsburgh	1.80c
New York, del.	2.09c
Philadelphia, del.	1.99c
Boston, delivered	2.22c
Buffalo, delivered	2.05c
Chicago or Gary	1.85c
Cleveland, del.	1.99½c
Birmingham	1.95c
Coatesville, base	1.90c
Sparrows Pt., base	1.90c
Pacific ports, f.o.b. cars, dock	2.35c
St. Louis, delivered	2.08c

Structural Shapes

Pittsburgh	1.80c
Philadelphia, del.	2.01½c
New York, del.	2.06½c
Boston, delivered	2.20½c
Bethlehem	1.90c
Chicago	1.85c
Cleveland, del.	2.00c
Buffalo	1.90c
Gulf Ports	2.20c
Birmingham	1.95c
Pacific ports, f.o.b. cars, dock	2.35c

Bars

Soft Steel

(Base, 5 to 25 tons)

Pittsburgh	1.85c
Chicago or Gary	1.90c
Duluth	2.00c
Birmingham	2.00c
Cleveland	1.90c
Buffalo	1.95c
Detroit, delivered	2.00c
Pacific ports, f.o.b. cars, dock	2.40c
Philadelphia, del.	2.16c
Boston, delivered	2.27c
New York, del.	2.20c
Pitts., forg. qual.	2.10c

Rail Steel

To Manufacturing Trade

Pittsburgh	1.70c
Chicago or Gary	1.75c
Moline, Ill.	1.75c
Cleveland	1.75c
Buffalo	1.80c

Iron

Troy, N. Y.	1.70c
Terre Haute, Ind.	1.75c
Chicago	1.80c
Philadelphia	2.06c
Pittsburgh, refined	2.75-7.50c

Reinforcing

New billet, straight lengths, quoted by distributors.

Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young.	2.10c
Gulf ports	2.45c
Pacific coast ports f.o.b. cars dock	2.45c
*Philadelphia, del.	2.11c-2.16c

Rail steel, straight lengths, quoted by distributors

Pittsburgh	1.90c
Chicago, Buffalo, Cleveland, Birm., Young.	1.95c
Gulf ports	2.30c

Wire Products

Wire Products
(Prices apply to straight or mixed carloads; less carloads $4 higher; less carloads fencing $5 over base column.)

Base Pitts.-Cleve. 100 lb. keg.	
Standard wire nails	$2.40
Cement coated nails	2.40
Galvanized nails, 15 gage and coarser	4.40
do. finer than 15 gage	4.90

(Per pound)

Polished staples	3.10c
Galvanized fence staples	3.35c
Barbed wire, galv.	2.80c
Annealed fence wire	2.45c
Galvanized fence wire	2.80c
Woven wire fencing (base column, c.l.)	$61.00

To Manufacturing Trade

Plain wire, 6-9 gage 2.30c
Anderson, Ind. (merchant products only) and Chicago up $1; Duluth up $2; Birmingham up $3.
Spring wire, Pittsburgh or Cleveland 2.90c
Do., Chicago up $1, Worcester, $2.

Cold-Finished Carbon Bars and Shafting

Base, Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	2.10c
20,000 to 59,999 lbs.	2.05c
60,000 to 99,999 lbs.	2.00c
100,000 lbs. and over	1.97½c

Gary, Ind., Cleve., Chi., up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Alloy Steel Bars (Hot)

Pittsburgh, Buffalo, Chicago, Massilon, Canton, Bethlehem 2.45c

Alloy S.A.E.	Diff.	Alloy S.A.E.	Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo. 0.50
4600 0.20 to 0.30 Mo, 1.25-1.75 Ni. 1.05
5100 0.80-1.10 Cr. 0.45
5100 Cr. spring base
6100 bars 1.20
6100 spring 0.70
Cr., Ni., Van. 1.50
Carbon Van. 0.95
9250 carbon base plus extras

Piling

Pittsburgh	2.15c
Chicago, Buffalo	2.25c

Strip and Hoops

Hot strip to 23⅛-in.	
Pittsburgh	1.85c
Chicago or Gary	1.95c
Birmingham base	2.00c
Detroit, delivered	2.05c
Philadelphia, del.	2.16c
New York, del.	2.20c
Cooperage hoop,	
Pittsburgh	1.95c
Chicago	2.05c
Cold-strip, Pitts. Cleve.	2.60c
Detroit, del.	2.65c
Worcester, Mass.	2.80c

Rails, Track Material

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts.	
20-45 lbs.	$28.00
45-50 lbs.	$25.00
50-60 lbs.	$26.00
70-75 lbs.	$24.50
80-90 lbs.	$26.00
100 lbs.	$27.00
Light rails, billet qual. Pitts., Chi.	$35.00
Do., reroll, qual.	34.00
Angle bars, billet, Gary, Ind., So. Chi.	2.55c
Do., axle steel	2.10c
Spikes, R. R. base	2.60c
Track bolts, base	3.60c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $2; 16 and 20 lbs., up $1; 12 lbs. up $2; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots, Dec. 1, 1932, lists, 10% extra for less full containers.

Carriage and Machine

½ x 6 and smaller	70-10-5 off
Do. larger	70-10 off
Tire bolts	55 off

Plow Bolts

All sizes 70-10 off

Stove Bolts

In packages with nuts attached 72½-10 off; in packages with nuts separate 72½-10-5 off; in bulk 82½ off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	65-5 off
Elevator bolts	65-5 off

Nuts

S. A. E. semifinished hex.; ½ to ⅞-inch	60-20-15 off
Do., ½ to 1-inch	60-20-15 off
Do., over 1-inch	60-20-15 off

Hexagon Cap Screws

Milled	80-10-10 off
Upset, 1-in., smaller	85 off

Square Head Set Screws

Upset, 1-in., smaller	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	2.90c
Struc., c. l., Chicago	3.00c
⅞-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila., to jobbers & large nut, bolt mfrs.	$6.25 off

Cut Nails

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more, no discount on size extras	$3.05
Do., under 5 kegs; no disc. on size extras	$3.20

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads, Gary, Ind., 2 points less, Chicago, del. 2½ points less. Wrought pipe, Pittsburgh,

Butt Weld

Steel

In.	Blk.	Galv.
¼ and ⅜	53½	35
½	58½	47
¾	62	52
1—3	64	55

Iron

½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

Lap Weld

Steel

2	60	51
2½—3	63	54
3½—6	65	56
7 and 8	64	54
9 and 10	63½	53½

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½

Line Pipe

Steel

½, butt weld	57½
⅛-inch butt weld	50½
¼—⅜, butt weld	52½
¾, butt weld	61
1—3, butt weld	63
2-inch, lap weld	59
2½—3, lap weld	62
3½—6, lap weld	64
7—8, lap weld	63

Iron

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe lists, 8—12-inch, no extra.

Boiler Tubes

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¼—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 200 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron: 10,000 pounds to carloads, base less 5%; under 10,000 lbs., 2 points under base.

Seamless Boiler Tubes

Under date of May 15 in lots of 40,000 pounds or more for cold-drawn boiler tubes and in lots or 40,000 pounds or feet or more for hot-finished boiler tubes, revised prices are quoted for 55 cold-drawn boiler tube sizes ranging from ¼ to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.035 to 1.000, on a dollars and cents basis per 100 feet and per pound. Less-carloads revised as of July 1, 1935, card.

Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

Seamless Tubing

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$39.00-40.00
4-in., Birmingham	42.00-43.00
4-in., Chicago	50.40-51.40
6 to 24-in. Chicago	47.40-48.40
6-in. & over, east. fdy.	43.00
Do., 4-in.	46.00

Class A pipe $3 over Class B
Stnd. fitgs., Birm. base $100.00

Semifinished Steel

Billets and Blooms

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., and Youngstown	$29.00
Philadelphia	34.67
Duluth	31.00

Forging Billets

6 x 6 to 9 x 9-in., base

Pitts., Chi., Buff.	35.00
Forging, Duluth	37.00

Sheet Bars

Pitts., Cleve., Young., Chi., Buff., Canton, Sparrows Pt.	30.00

Slabs

Pitts., Chi., Cleve., Young.	29.00

Wire Rods

(Common; combination up $2)

Pitts., Cleveland	40.00
Chicago	41.00
Worcester, Mass.	42.00

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Point	1.80c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.50- 3.65
Connellsville, fdry.	4.00- 4.25
Connel., prem. fdry.	5.50- 5.75
New River fdry.	6.00
Wise county fdry.	4.45- 5.00
Wise county fur.	4.00- 4.50

By-Product Foundry

Newark, N. J., del.	9.70-10.15
Chi., ov., outside del.	9.00
Chicago, del.	9.75
New England, del.	11.50
St. Louis, del.	10.00
Birmingham, ovens	6.50
Indianapolis, del.	9.40
Cincinnati, del.	9.50
Cleveland, del.	9.75
Buffalo, ovens	7.50- 8.00
Detroit, ov., out. del.	9.00
Philadelphia, del.	9.38

Coke By-Products

Per gallon, producers' plants.

Tank lots	Spot
Pure and 90% benzol	18.00c
Toluol	30.00c
Solvent naphtha	30.00c
Commercial xylol	30.00c

Per lb. f.o.b. New York.

Phenol (200 lb. drums)	16.30c
Do. (100 lbs.)	17.30c

Eastern Plants, per lb.

Naphthalene flakes and balls, in bbls., to jobbers	6.75c

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.20

†Western prices, ½-cent up.

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25; 50c diff. for each 0.25 below 1.75. Gross tons.

Basing Points:	No. 2 Fdry	Malleable	Basic	Bessemer
Bethlehem, Pa.	$20.50	$21.00	$20.00	$21.50
Birdsboro, Pa.	20.50	21.00	20.00	21.50
Birmingham, Ala., southern del.	15.50	15.50	14.50	21.00
Buffalo	19.50	20.00	18.50	20.50
Chicago	19.50	19.50	19.00	20.00
Cleveland	19.50	19.50	19.00	20.00
Detroit	19.50	19.50	19.00	20.00
Duluth	20.00	20.00	.....	20.50
Erie, Pa.	19.50	20.00	19.00	20.50
Everett, Mass.	20.50	21.00	20.00	21.50
Hamilton, O.	19.50	19.50	19.00	.....
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	19.50	19.50	19.00	20.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	19.50	19.50	19.00	20.00
Sparrows Point, Md.	20.50	.....	20.00	.....
Swedeland, Pa.	20.50	21.00	20.00	21.50
Toledo, O.	19.50	19.50	19.00	20.00
Youngstown, O.	19.50	19.50	19.00	20.00
Delivered from Basing Points:				
Akron, O., from Cleveland	20.76	20.76	26.26	21.26
Baltimore from Birmingham	21.08	.....	19.96	.....
Boston from Birmingham	20.62	.....	20.50	.....
Boston from Everett, Mass.	21.00	21.50	20.50	22.00
Boston from Buffalo	21.00	21.50	20.50	22.00
Brooklyn, N. Y., from Bethlehem	22.93	23.43	.....	.....
Brooklyn, N. Y., from Bmghm.	22.50	.....	.....	.....
Canton, O., from Cleveland	20.76	20.76	20.26	21.26
Chicago from Birmingham	†19.72	.....	19.60	.....
Cincinnati from Hamilton, O.	20.58	20.58	20.08	.....
Cincinnati from Birmingham	20.20	.....	19.20	.....
Cleveland from Birmingham	19.62	.....	19.12	.....
Indianapolis from Hamilton, O.	21.93	21.93	21.43	22.43
Mansfield, O., from Toledo, O.	21.26	21.26	20.76	21.76
Milwaukee from Chicago	20.57	20.57	20.07	21.07
Muskegon, Mich., from Chicago Toledo or Detroit	22.60	22.60	22.10	23.10
Newark, N. J., from Birmingham	21.61	.....	.....	.....
Newark, N. J., from Bethlehem	21.99	22.49	.....	.....
Philadelphia from Birmingham	20.93	.....	20.81	.....
Philadelphia from Swedeland, Pa.	21.31	21.81	20.81	.....
Pittsburgh district from Neville Island	Neville base plus 67c, 81c and $1.21 switching charges			
Saginaw, Mich., from Detroit	21.75	21.75	21.25	21.25

Delivered from Basing Points:	No. 2 Fdry	Malleable	Basic	Bessemer
St. Louis, northern	20.00	20.00	19.50	.....
St. Louis from Birmingham	†19.62	.....	19.50	.....
St. Paul from Duluth	21.94	21.94	.....	22.44

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $24.00, Phila. base, standard and copper bearing, $25.13.

Gray Forge		Charcoal	
Valley furnace	19.00	Lake Superior fur.	$22.00
Pitts. dist. fur.	19.00	Do., del. Chicago	25.25
		Lyles, Tenn.	22.50

Silvery†

Jackson county, O., base; 6-6.50 per cent $22.75; 6.51-7—$23.25; 7-7.50—$23.75; 7.51-8—$24.25; 8-8.50—$24.75; 8.51-9—$25.25; 9-9.50—$25.75. Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon. 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$55.00

First Quality

Pa., Ill., Md., Mo., Ky.	$45.00
Alabama, Ga.,	$38.00-45.00

Second Quality

Pa., Ill., Ky., Md., Mo.	40.00
Ga., Ala.	35.00

Ohio

First quality	$40.00
Intermediary	37.00
Second quality	28.00

Malleable Bung Brick

All bases	50.00

Silica Brick

Pennsylvania	$45.00
Joliet, E. Chicago	54.00
Birmingham, Ala.	52.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	40.00
Domestic dead-burned gr. net ton f.o.b. Chewelah, Wash. (bulk)	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$45.00
Chemically bonded chrome brick	45.00
Magnesite brick	65.00
Chemically bonded magnesite brick	55.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$20.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all-rail	$16.00
Do., for barge	$17.50

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid	75.00
Do., Balti. base	75.00
Do., del. Pittsb'gh	80.13
Spiegeleisen, 19-20% dom. Palmerton, Pa., spot†	26.00
Do., New Orleans	26.00
Ferrosilicon, 50% freight all., cl.	77.50
Do., less carload	85.00
Do., 75 per cent	126-130.00
Spot, $5 a ton higher.	
Silicoman., 2½ carb.	85.00
2% carbon, 90.00; 1%,	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del.	10.00
Ferrotungsten, stand., lb. con. del.	1.35- 1.45
Ferrovanadium, 35 to 40% lb., cont.	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt. allow., lb.	7.00
Do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, $3 unitage	58.50
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $3 unitage	75.00
Ferromolybdenum, stand. 55-65%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads, Quan. diff. apply.

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

	Copper: Electro, del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin: New York Spot	Straits Tin: Futures	Lead: New York N. Y.	Lead: East St. L.	Zinc St. L.	Aluminum 99%	Antimony Chinese Spot, N. Y.	Nickel Cathodes
Jan. 11	9.25	9.37½	8.85	47.62½	46.25	4.50	4.35	4.85	*19.00	12.62½	35.00
Jan. 13	9.25	9.37½	8.85	47.80	46.50	4.50	4.35	4.85	*19.00	12.62½	35.00
Jan. 14	9.25	9.37½	8.85	47.75	46.35	4.50	4.35	4.85	*19.00	12.62½	35.00
Jan. 15	9.25	9.37½	8.85	47.62½	46.20	4.50	4.35	4.85	*19.00	12.62½	35.00
Jan. 16	9.25	9.37½	8.85	47.62½	46.35	4.50	4.35	4.85	*19.00	12.62½	35.00
Jan. 17	9.25	9.37½	8.85	47.35	46.20	4.50	4.35	4.85	*19.00	12.62½	35.00

*Nominal range 19.00 to 21.00c.

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 9.00c Conn. copper.

Sheets	
Yellow brass (high)	14.62½
*Copper hot rolled	16.50
Lead cut to jobbers	8.25
Zinc, 100-lb. base	9.50
Tubes	
*High yellow brass	16.87½
*Seamless copper	17.00
Rods	
High yellow brass	13.12½
Copper, hot rolled	13.50
Anodes	
Copper untrimmed	14.00
Wire	
Yellow brass (high)	15.12½

OLD METALS

Deal. buying prices, cents lb.

No. 1 Composition Red Brass	
New York	5.75- 6.00
Cleveland	6.37½- 6.50
*Chicago	5.75- 6.00
St. Louis	6.00- 6.25
Heavy Copper and Wire	
New York, No. 1	7.00- 7.25
Chicago, No. 1	7.00- 7.25
Cleveland	6.75- 7.00
St. Louis, No. 1	7.00- 7.37½
Composition Brass Borings	
New York	5.00- 5.25
Light Copper	
New York	5.75- 6.00
Chicago	5.50- 5.75
Cleveland	5.87½- 6.00
St. Louis	5.75- 6.00
Light Brass	
Chicago	3.37½-3.62½
Cleveland	3.25- 3.50
St. Louis	3.50- 3.75
Lead	
New York	3.50- 3.75
Cleveland	3.50- 3.75
Chicago	3.37½-3.62½
St. Louis	3.65- 3.75
Zinc	
New York	2.00- 2.25
Cleveland	2.50- 2.75
St. Louis	2.75-3.00
Aluminum	
Borings, Cleveland	9.00- 9.50
Mixed, cast, Cleve.	13.25-13.50
Mixed, cast, St. L.	13.00-13.50
Clips, soft, Cleve.	15.00-15.25

SECONDARY METALS

Brass ingot, 85-5-5-5	9.50
*Stand. No. 12 alum.	17.00

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	8.50- 9.50
Boston, dock, expt.	9.50- 9.75
Boston, domestic	7.75 8.00
Buffalo, No. 1	9.75-10.00
Buffalo, No. 2	11.00-11.50
Chicago, No. 1	13.25-13.75
Cleveland, No. 1	13.25
Cleveland, No. 2	12.25
Detroit, No. 1	10.00-10.50
Detroit, No. 2	8.75- 9.25
Eastern Pa., No. 1	12.00-12.50
Eastern Pa. No. 2	11.00-11.50
Federal, Ill.	10.25-10.75
Granite City, R. R.	11.25-11.75
Granite City, No. 2	9.25- 9.75
N. Y., deal. No. 2	7.50- 7.75
N. Y., deal. barge (No. 1 for export)	9.00
Pitts., No. 1 (R. R.)	14.50-15.00
Pitts., No. 1 (dlr.)	14.25-14.75
Pittsburgh, No. 2	13.00-13.50
St. Louis	9.25- 9.75
Toronto	8.00
Valleys, No. 1	13.75-14.00

COMPRESSED SHEETS

Buffalo, dealers	11.00-11.50
Chicago, factory	12.00-12.50
Chicago, dealer	11.50-12.00
Cleveland	12.50-13.00
Detroit	10.50-11.00
E. Pa., new mat.	11.50-12.00
Pittsburgh	14.25-14.75
St. Louis	7.00- 7.50
Valleys	13.25-13.75

BUNDLED SHEETS

Buffalo	9.00- 9.50
Cincinnati, del.	8.00- 8.50
Cleveland	9.75-10.25
Pittsburgh	13.00-13.50
St. Louis	5.50- 6.05

SHEET CLIPPINGS, LOOSE

Chicago	7.50- 8.00
Cincinnati	7.50- 8.00
Detroit	7.50- 8.00
St. Louis	5.00- 5.50

STEEL RAILS, SHORT

Birmingham	12.50-13.00
Buffalo	15.00-15.50
Chicago (3 ft.)	14.50-15.00
Chicago (2 ft.)	15.50-16.00
Cincinnati, del.	14.00-14.50
Detroit	13.50-14.00
Pitts., open-hearth, 3 ft. and less	15.25-15.75
St. Louis, 2 ft. & less	14.00-14.50

STEEL RAILS, SCRAP

Boston	7.50- 7.75
Chicago	13.50-14.00
Pittsburgh	14.50-15.00
St. Louis	11.50-12.00
Buffalo	12.00-12.50

STOVE PLATE

Birmingham	7.00- 7.50
Boston, dealers	4.75- 5.00
Buffalo	10.25-10.75
Chicago	7.00- 7.50
Cincinnati, dealers	7.50- 8.00
Detroit, net	7.00- 7.50
Eastern Pa.	9.50- 9.75
N. Y., deal. fdry.	6.50- 7.00
St. Louis	7.00- 7.50

COUPLERS, SPRINGS

Buffalo	14.50-15.00
Chicago, springs	14.00-14.50
Eastern Pa.	15.50-16.00
Pittsburgh	16.50-17.00
St. Louis	12.00-12.50

ANGLE BARS—STEEL

Chicago	14.00-14.50
St. Louis	12.25-12.75
Buffalo	14.50-15.00

RAILROAD SPECIALTIES

Chicago	14.00-14.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	14.50-15.00
Cleveland, billet, bloom crops	16.00-16.50
Eastern Pa., crops	15.50-16.00
Pittsburgh, billet, bloom crops	17.00-17.50
Pittsburgh, sheet bar crops	15.75-16.25

FROGS, SWITCHES

Chicago	13.00-13.50
St. Louis, cut	11.50-12.00

SHOVELING STEEL

Chicago	13.25-13.75
Federal, Ill.	10.25-10.75
Granite City, Ill.	9.25- 9.75

RAILROAD WROUGHT

Birmingham	7.00- 7.50
Boston, dealers	6.00- 6.50
Buffalo, No. 1	11.00-11.50
Buffalo, No. 2	12.00- 12.50
Chicago, No. 1, net	12.00-12.50
Chicago, No. 2	13.25-13.75
Cincinnati, No. 2	11.00-11.50
Eastern Pa.	12.50
N. Y., No. 1 deal.	9.50-10.00
St. Louis, No. 1	9.25- 9.75
St. Louis, No. 2	10.50-11.00
Toronto, No. 1	6.00

SPECIFICATION PIPE

Eastern Pa.	11.50
New York, dealers	6.75- 7.25

BUSHELING

Buffalo, No. 1	11.00-11.50
Chicago, No. 1	12.00-12.50
Cinci., No. 1, deal.	8.00- 8.50
Cincinnati, No. 2	5.00- 5.50
Cleveland, No. 2	8.25- 8.75
Detroit, No. 1, new	9.75-10.25
Valleys, new, No. 1	13.00-13.25

MACHINE TURNINGS

Birmingham	4.00- 4.50
Boston, dealers	3.50- 3.75
Buffalo	5.75- 6.25
Chicago	6.50- 7.00
Cincinnati, dealers	6.00- 6.50
Cleveland	7.50- 8.00
Detroit	5.75- 6.25
Eastern Pa.	7.50- 8.00
New York, dealers	4.00- 4.50
Pittsburgh	9.75-10.25
St. Louis	3.25- 3.75
Toronto	3.50
Valleys	9.00- 9.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	2.50- 2.75
Buffalo	7.75- 8.25
Cincinnati, dealers	5.50- 6.00
Cleveland	8.25- 8.75
Detroit	5.75- 6.25
Eastern Pa.	6.00- 6.50
New York, dealers	2.00- 2.50
Pittsburgh	8.50- 9.00

CAST IRON BORINGS

Birmingham, plain	4.00- 4.50
Boston, chemical	5.50- 6.50
Boston, dealers	3.25- 3.50
Buffalo	7.75- 8.25
Chicago	6.00- 6.50
Cincinnati, dealers	5.50- 6.00
Cleveland	8.25- 8.75
Detroit	5.75- 6.25
E. Pa., chemical	10.00-12.00
New York, dealers	3.50- 4.00
St. Louis	3.75- 4.25

PIPE AND FLUES

Cincinnati, dealers	7.50- 8.00

RAILROAD GRATE BARS

Buffalo	8.50- 9.00
Chicago, net	7.50- 8.00
Cincinnati	6.00- 6.50
Eastern Pa.	9.50-10.00
New York, dealers	5.00- 5.25
St. Louis	7.50- 8.00

FORGE FLASHINGS

Boston, dealers	6.75- 7.00
Buffalo	11.00-11.50
Cleveland	11.00-11.50
Detroit	9.00- 9.50
Pittsburgh	13.00-13.50

FORGE SCRAP

Boston, dealers	4.50- 5.00
Chicago, heavy	14.00-14.50
Eastern Pa.	11.50-12.00

ARCH BARS, TRANSOMS

St. Louis	12.25-12.75

AXLE TURNINGS

Boston, dealers	3.75- 4.25
Buffalo	10.50-11.00
Chicago, elec. fur.	13.00-13.50
Eastern Pa.	11.00
St. Louis	8.50- 9.00
Toronto	4.50

STEEL CAR AXLES

Birmingham	12.00-12.50
Boston, ship. point	11.00-11.25
Buffalo	14.50-15.00
Chicago, net	14.50-15.00
Eastern Pa.	17.00
St. Louis	12.75-13.25
Toronto	8.00

SHAFTING

Boston, ship. point	13.25-13.50
Eastern Pa.	18.50
New York, dealers	13.50-14.00
St. Louis	13.00-13.50

CAR WHEELS

Birmingham	9.50-10.00
Boston, iron deal.	7.75- 8.00
Buffalo, iron	11.00-11.50
Buffalo, steel	14.50-15.00
Chicago, iron	13.00-13.50
Chicago, rolled steel	14.00-14.50
Cincinnati, iron	11.00-11.50
Eastern Pa., iron	13.50-14.00
Eastern Pa., steel	15.50-16.00
Pittsburgh, iron	14.00-14.50
Pittsburgh, steel	16.25-16.75
St. Louis, iron	10.25-10.75
St. Louis, steel	12.00-12.50
Toronto, net	7.00

NO. 1 CAST SCRAP

Birmingham	9.50-10.00
Boston, No. 1 mach.	9.00- 9.25
Boston, No. 2	8.25- 8.50
Boston, tex. con.	8.50- 9.00
Buffalo, cupola	11.50-12.00
Buffalo, mach.	12.50-13.00
Chicago, agri. net	10.00-10.50
Chicago, auto	11.00-11.50
Chicago, mach. net	12.00-12.50
Chicago, railr'd net	10.50-11.00
Cinci., mach. cup	10.50-11.00
Cleveland, cupola	12.75-13.25
Detroit, net	11.50-12.00
Eastern Pa., cupola	12.50-13.00
E. Pa., mixed yard	10.50
Pittsburgh, cupola	13.75-14.25
San Francisco, del.	13.50-14.00
Seattle	7.50- 9.00
St. Louis, No. 1	11.00-11.50
St. L., No. 1 mach.	12.50-13.00
Toronto, No. 1, mach., net	8.50

HEAVY CAST

Boston, del.	6.50- 6.75
Buffalo, break.	10.25-10.75
Cleveland, break	10.50-11.00
Detroit, No. 1 mach. net	12.00-12.50
Detroit, break.	9.50-10.00
Detroit, auto net	11.50-12.00
Eastern Pa.	12.00
N. Y., break. deal.	7.50- 8.00
Pittsburgh	12.50-13.00

MALLEABLE

Birmingham, R. R.	11.50-12.50
Boston, consum.	13.50-14.50
Buffalo	15.00-15.50
Chicago, R. R.	15.75-16.25
Cincinnati, agri. del.	12.50-13.00
Cleveland, rail	16.00-16.50
Detroit, auto net	13.00-13.50
Eastern Pa., R. R.	15.50
Pittsburgh, rail	16.50-17.00
St. Louis, R. R.	13.75-14.25
Toronto, net	7.00

RAILS FOR ROLLING

5 feet and over

Birmingham	11.00-11.50
Boston, dealers	8.00- 8.50
Buffalo	12.00-12.50
Chicago	14.00-14.50
Eastern Pa.	13.00-14.00
New York, dealer	9.75-10.25
St. Louis	13.50-14.00

LOCOMOTIVE TIRES

Chicago (cut)	14.00-14.50
St. Louis, No. 1	11.75-12.25

LOW PHOS. PUNCHINGS

Buffalo	14.50-15.00
Chicago	15.50-16.00
Eastern Pa.	15.00-15.50
Pittsburgh (heavy)	16.00-16.50
Pittsburgh (light)	15.50-16.00

Iron Ore

Lake Superior Ore

Gross ton, 51½% Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

Foreign Ore

Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.50
No. Afr. low phos.	10.50
Swedish basic, 65%	9.50
Swedish low phos.	10.50
Spanish No. Africa basic, 50 to 60%	10.50
Tungsten, spot sh. ton unit, duty pd.	$15.85-16.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	19.25

Manganese Ore

(Nominal)

Prices not including duty, cents per unit cargo lots

Caucasian, 52-55%	26.00
So. African, 52%	26.00
So. Afr., 49-51%	24.00
Indian, 58-60%	nominal
Indian, 48-50%	nominal

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS

Baltimore*	3.00c
Boston††	3.10c
Buffalo	3.00c
Chattanooga	3.36c
Chicago (j)	3.00c
Cincinnati	3.22c
Cleveland	3.00c
Detroit	3.09c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.11c-3.26c
New Orleans	3.35c
New York‡ (d)	3.31c
Pitts. (h)	2.95c-3.10c
Philadelphia*	3.03c
Portland	3.70c
San Francisco	3.50c
Seattle	3.70c
St. Louis	3.25c
St. Paul	3.25c-3.40c
Tulsa	3.25c

IRON BARS

Portland	3.40c
Chattanooga	3.36c
Baltimore*	3.05c
Chicago	2.75c
Cincinnati	3.22c
New York‡(d)	3.36c
Philadelphia*	2.93c
St. Louis	3.25c
Tulsa	3.25c

REINFORCING BARS

Buffalo	2.60c
Chattanooga	3.36c
Chicago	2.10c-2.60c
Cleveland (c)	2.10c
Cincinnati	3.25c
Houston	3.25c
Los Ang., cl.	2.45c
New Orleans	3.50c
Pitts., plain (h)	3.05c
Pitts., twisted squares (h)	3.175c
San Francisco	2.45c
Seattle	2.45c
St. Louis	3.25c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore*	3.00c
Boston††	3.19c
Buffalo	3.25c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland	3.31c
Detroit	3.42c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York‡(d)	3.37c
Philadelphia*	2.98c
Pittsburgh (h)	3.15c
Portland (i)	3.70c
San Francisco	3.50c
Seattle (i)	3.70c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.50c

PLATES

Baltimore*	3.00c
Boston††	3.21c
Buffalo	3.37c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland, ¼-in. and over	3.31c
Detroit	3.42c
Detroit, 3/16-in.	3.65c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York‡(d)	3.40c
Philadelphia*	2.98c
Phila. floor	4.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.50c
Seattle	3.55c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.50c

NO. 10 BLUE

Baltimore*	3.10c
Boston††	3.30c
Buffalo	3.62c
Chattanooga	3.36c
Chicago	3.05c
Cincinnati	3.22c
Cleveland	3.11c
Det., 8-10 ga.	3.14c
Houston	3.35c
Los Angeles	3.70c
Milwaukee	3.16c
New Orleans	3.55c
New York‡(d)	3.31c
Portland	3.75c
Philadelphia*	3.08c
Pittsburgh(h)	2.95c
San Francisco	3.60c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.30c
Tulsa	3.70c

NO. 24 BLACK

Baltimore*†	3.60c
Boston (g)	3.95c
Buffalo	3.25c
Chattanooga	4.16c
Chicago	3.85c
Cincinnati	4.02c
Cleveland	3.91c
Detroit	3.94c
Los Angeles	4.35c
Milwaukee	3.96c
New Orleans	4.50c
New York‡(d)	3.89c
Philadelphia*†	3.60c
Pitts.** (h)	3.55c
Portland	4.40c
San Francisco	4.25c
Seattle	4.40c
St. Louis	4.10c
St. Paul	3.90c
Tulsa	4.75c

NO. 24 GALV. SHEETS

Baltimore*†	4.30c
Buffalo	4.00c
Boston (g)	4.65c
Chattanooga	4.86c
Chicago (h)	4.55c
Cincinnati	4.72c
Cleveland	4.61c
Detroit	4.72c
Houston	4.40c
Los Angeles	4.95c
Milwaukee	4.66c
New Orleans	4.95c
New York‡(d)	4.30c
Philadelphia*†	4.40c
Pitts.**(h)	4.15-4.45c
Portland	5.00c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.65c
St. Paul	4.50c
Tulsa	5.10c

BANDS

Baltimore*	3.20c
Boston††	3.30c
Buffalo	3.42c
Chattanooga	3.61c
Chicago	3.30c
Cincinnati	3.47c
Cleveland	3.36c
Detroit, 5/16-in. and lighter	3.39c
Houston	3.25c
Los Angeles	4.10c
Milwaukee	3.41c
New Orleans	3.95c
New York‡(d)	3.56c
Philadelphia	3.18c
Pittsburgh (h)	3.20c
Portland	4.25c
San Francisco	4.10c
Seattle	4.25c
St. Louis	3.55c
St. Paul	3.55c
Tulsa	3.45c

HOOPS

Baltimore	2.30c
Boston††	4.50c
Buffalo	3.42c
Chicago	3.30c
Cincinnati	3.47c
Det., No. 14 and lighter	3.39c
Los Angeles	5.85c
Milwaukee	3.41c
New York‡(d)	3.56c
Philadelphia	3.43c
Pittsburgh (h)	3.70c
Portland	5.60c
San Francisco	6.15c
Seattle	5.60c
St. Louis	3.55c
St. Paul	3.55c

COLD FIN. STEEL

Baltimore (c)	3.73c
Boston	3.90c
Buffalo (h)	3.55c
Chattanooga*	4.13c
Chicago (h)	3.50c
Cincinnati	3.72c
Cleveland (h)	3.50c
Detroit	3.79c
Los Ang. (f) (d)	6.00c
Milwaukee	3.61c
New Orleans	4.30c
New York‡(d)	3.81c
Philadelphia	3.76c
Pittsburgh	3.50c
Portland (f) (d)	6.15c
San Fran.(f) (d)	5.95c
Seattle (f) (d)	6.15c
St. Louis	3.75c
St. Paul	4.02c
Tulsa	4.65c

COLD ROLLED STRIP

Boston, 0.100-in., 500 lb. lots	3.245c
Buffalo	3.39c
Chicago	3.27c
Cincinnati (b)	3.22c
Cleveland (b)	3.20c
Detroit	3.33c
New York‡(d)	3.36c
St. Louis	3.45c

TOOL STEELS

(Applying on or east of Mississippi river; west of Mississippi 1c up)

	Base
High speed	57c
High carbon, high chrome	37c
Oil hardening	22c
Special tool	20c
Extra tool	17c
Regular tool	14c

Uniform extras apply.

BOLTS AND NUTS

(100 pounds or over)

	Discount
Chicago (a)	70
Cleveland	70
Detroit	70-10
Milwaukee	70
Pittsburgh	70

(a) Under 100 pounds, 65 off.

(b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Base prices; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 in.; (j) shapes other than rounds, flats, fillet angles, 3.15c.

‡Domestic steel; *Plus quan. extras; **Under 25 bundles; *†50 or more bundles; † New extras apply; ††Base 40,000 lbs., extras on less.

Prices on heavier lines are subject to new quantity differentials; 399 lbs. and less, up 50 cts.; 400 to 9999 lbs., base; 10,000 to 19,999 lbs., 15 cts. under; 20,000 to 39,999 lbs., 25 cts. under; 40,000 lbs. and over, 35 cts. under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Jan. 16

Export Prices f. o. b. Ship at Port of Dispatch—(By Cable or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons	
PIG IRON	£ s d		Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Silicon	$15.44	3 2 6	$13.38	1 13 0
Basic bessemer	15.44	3 2 6*	12.10	1 11 0
Hematite, Phos. .03-.05	16.09	3 5 0	.....	.....
SEMIFINISHED STEEL				
Billets	$27.22	5 10 0	$19.02	2 7 0
Wire rods, No. 5 gage	42.08	8 10 0	36.44	4 10 0
FINISHED STEEL				
Standard rails	$40.84	8 5 0	$44.53	5 10 0
Merchant bars	1.65c	7 10 0	1.15c to 1.20c	3 2 6 to 3 5 0
Structural shapes	1.65c	7 10 0	1.14c	3 1 6
Plates, †¼ in. or 5 mm.	1.76c	8 1 3	1.56c	4 5 0
Sheets, black, 24 gage or 0.5 mm.	2.15c	9 15 0	2.13c	5 16 0††
Sheets, gal., 24 gage, corr.	2.59c	11 15 0	2.28c	6 5 0
Bands and strips	1.87c	8 10 0	1.46c	4 0 0
Plain wire, base	2.04c	9 5 0	1.76c	5 5 0
Galvanized wire, base	2.37c	10 15 0	2.15c	5 17 6
Wire nails, base	2.65c	12 0 0	1.75c	4 15 0
Tin plate, box 108 lbs.	$ 4.65	0 18 9	.....	.....

British ferromanganese $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d $(43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$17.32	3 10 0(a)	$17.13	260	$12.87	385	$25.48	63
Basic bessemer pig iron	17.32	3 10 0(a)	12.52	190	11.88	350	28.11	(b)69.50
Furnace coke	4.70	0 19 0	6.26	95	4.90	115	7.68	19
Billets	27.22	5 10 0	28.34	430	18.33	540	39.02	96.50
Standard rails	2.21c	8 5 0	2.00c	671	1.69c	1,100	2.63c	132
Merchant bars	2.31c	8 12 0	1.68c	560	.92c	600	2.19c	110
Structural shapes	2.34c	8 15 0	1.65c	550	.92c	600	1.97c	107.50
Plates, †¼-in. or 5 mm.	2.43c	9 1 3	2.10c	700	1.07c	700	2.32c	127‡
Sheets, black	3.09c	11 10 0§	1.80c	600‡	1.26c	825‡	2.67c	144
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.62c	13 10 0	3.00c	1,000	2.30c	1,500	6.78c	370
Plain wire	2.49c	9 5 0	2.64c	900	1.77c	1,150	3.17c	173
Bands and strips	2.52c	9 7 0	1.95c	650	1.29c	840	2.32c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel, a del. Middlesbrough. b hematite. ††Close annealed.

**Gold pound sterling carries a premium of 66.25 per cent over paper sterling.

Bars

Bar Prices, Page 50

Chicago — Steel bar specifications are steady. Automotive releases have increased since Jan. 1, though the tonnage is somewhat below the active rate of early December. Farm implement manufacturers are holding to brisk schedules, operations being estimated at 75 to 90 per cent of normal. There is no evidence of any immediate effect on implement business as a result of the AAA decision. Miscellaneous bar consumers are taking material in fairly even volume. Bar prices are steady, 1.90c, base, being the going figure.

Cleveland — Agricultural implement manufacturers have sufficient orders to carry a strong operating rate for the first half this year, and no adverse effect has yet been felt from the AAA decision. Steelmakers say the increased business confidence resulting from recent Supreme Court rulings on government programs will be beneficial. General steel tonnage, in which bars figure conspicuously, booked by a leading interest here so far this year is slightly ahead of that in the same period in December, despite a slowing in automobile releases. Forgers are busy on previous contracts, and taking material regularly. Bolt and nut manufacturers are more active. Orders from builders of mechanical handling devices, such as road machinery and coal mine equipment, are good.

Pittsburgh — Specifications are holding well, especially in alloy steel for automotive needs. Implement makers are taking more bars, and railroad inquiry indicates larger requirements.

Philadelphia — Improvement in miscellaneous demand for finished steel the past few days has been extended to commercial steel bars. Inventories revealed low stocks at many consuming plants, notwithstanding a spurt in specifications in late November. Some good tonnage is pending for railroad and ship work. The current market is 1.85c, Pittsburgh, or 2.16c, Philadelphia.

Boston—Specifications for steel bars have shown considerable improvement to about the volume of December. The market continues 1.85c, base, Pittsburgh, equivalent to 2.27c, delivered, Boston. The only weakness noticed is in connection with foreign steel bars which in some cases have sold at as low as 1.90c, delivered, in this territory.

Youngstown, O.—Steel bar mills continue busy with deliveries delayed. Alloy bars are moving freely and no slackening in auto parts demand as yet is very noticeable.

Plates

Plate Prices, Page 50

Philadelphia — Barring formal distribution of car tonnage by the Pennsylvania, expected this week, ship work continues to be of greatest promise in this district. More than 20,000 tons for the Sun Shipbuilding Co., Chester, Pa., is expected to be announced momentarily and a fair tonnage has been awarded by the navy for submarine work for rolling later on. Moreover, construction award may be made this week by the American-South African Steamship Lines Inc., New York, for a cargo passenger boat, requiring possibly 5000 tons of steel, two-thirds plates, and at least two tankers and probably more will be brought out for figures shortly. The outlook for tanker construction this year is regarded as exceptionally bright.

Navy work includes the award of approximately 2300 tons of plates to the Central Iron & Steel Co., Harrisburg, Pa., under schedule 6390, on which bids were opened Dec. 27 and for which plates, sheets and strip are required. Alan Wood Steel Co., Conshohocken, Pa., booked 315 tons on this schedule; the Lukens Steel Co., Coatesville, Pa., approximately 200 tons; Joseph P. Cattie & Bros., Philadelphia, 60 tons; the Penn Galvanizing Co., Philadelphia, 25 tons; the Enterprise Galvanizing Co., Philadelphia, 20 tons; and the Worth Steel Co., Claymont, Del., 15 tons. The schedule calls for tonnage for submarines.

Awards also have been made against a smaller schedule for submarine work, schedule 6391, on which bids were also opened Dec. 27. The participants in this tonnage, it is said, are the Jones & Laughlin Steel Corp., Pittsburgh; Carnegie-Illinois Steel Corp., Pittsburgh; Enterprise Galvanizing Co., Philadelphia, and A. M. Castle.

Pittsburgh — Railroad activity promises to bring considerable steel plate tonnage for repairs but these have not yet reached the contract stage.

Cleveland—Plate orders are light, and miscellaneous. Machinery builders placed more tonnage here than other fabricators. Tank and boiler work is lagging. Some of the shops specializing on boilers are buying material for manufacturing oil refinery equipment.

Chicago — Specifications from structural fabricators are slightly heavier, but demand from miscellaneous users shows little change and is rather quiet. Railroads, tank work and structural fabricators appear to offer the most promising prospects for increased consumption during coming months. Railroad use is principally for repair work, which is moderately active. Placing of municipal water tanks still is slow.

New York—Award of about 15,000 tons of hull steel is expected at any time, since the contract for the liner for the International Mercantile Marine-Roosevelt Steamship Co. to the Newport News Ship Building & Dry Dock Co. has been approved at Washington. American South African Steamship Lines Inc., New York, is expected to award construction of a cargo boat requiring 5000 tons of steel this week.

Boston — The plate market here is enlivened by much miscellaneous work. In some instances bookings over the last week have exceeded the December average. Among current jobs is a standpipe at Concord, N. H. The market continues 1.90c, base, Coatesville, Pa., equivalent to 2.22c, delivered, Boston.

San Francisco—Western Pipe & Steel Co., San Francisco, has been awarded 31,500 tons of welded steel pipe by the metropolitan water district, Los Angeles. The treasury department has placed with an unnamed interest 160 tons of welded steel pipe for use at Los Angeles.

Seattle—Inquiries are mainly under 100 tons. Reclamation bureau will open bids at Denver, Feb. 6, for four 36-inch, two 48-inch, two 65-inch and two 84-inch needle valves for the Vale project, Oregon, Moon Lake project, Utah, Taylor Park dam, Colo., and Seminole project, Wyo.

Contracts Placed

31,500 tons, for welded steel pipe for metropolitan water district, Los Angeles, to Western Pipe & Steel Co., San Francisco.

2300 tons, navy work, schedule 6390, to Central Iron & Steel Co., Harrisburg, Pa.; 615 tons additional in smaller lots to other suppliers.

135 tons, standpipe, North Reading, Mass., to Graver Tank & Mfg. Corp., East Chicago, Ind.

100 tons or more, oil tanks for Union Oil Co., Portland, Oreg., to Steel Tank & Pipe Co., Portland, Oreg.

Unstated, two storage tanks for British American Oil Refineries, Coutts, Mont., to unnamed interest.

Contracts Pending

2000 tons for municipal pipe line, Sheridan, Wyo.

500 tons, for 30-inch welded pipe line for Arcadia, Calif., bids Jan. 21.

Unstated, four tunnels for Black Canyon project, Idaho; J. A. Tertelling & Sons, Boise, Idaho, general contractor.

Tin Plate

Tin Plate Prices, Page 50

Youngstown — Valley mills continue to produce and ship as actively

as they have been doing for the past two months. There is a noticeable lull in new business, not unexpected at this time, since the new demand for the spring canning season is not expected to develop until after the canners' convention in Chicago next week.

Pittsburgh—Tin plate mills continue to operate in this district at about 70 per cent, up 10 points, with more business in sight. Near approach of the West coast salmon canning season is awaited with interest, centering on expected federal government's determination as to the lifting of regulatory restrictions on the size of the catch.

Sheets

Sheet Prices, Page 50

Cleveland—Sheet mills now are giving automobile partsmakers the same $3 a ton concession on hot and cold rolled annealed sheets as they have been granting to automobile manufacturers. As many contracts for parts are predicated on steel prices quoted to automobile interests, the latter have been offering to supply the partsmakers with the lower-price material. Hence, the concession on an f.o.b. Detroit basis. This has been restricted so far to the automobile industry. Automobile sheet specifications generally are lighter, and delivery dates have been deferred in many instances one to two weeks.

Chicago—A slight lull has appeared in sheet demand, principally as a result of reduced requirements of the automotive industry. This is regarded as a natural but temporary situation and still leaves total business in fairly heavy volume. Miscellaneous consumers generally hold to steady operations, this being true of the farm implement industry as well as of smaller users.

Pittsburgh—An increase in steel sheet orders has appeared in the past several days, indicating the inventory lull is passing, and mills again are adding to their backlogs. Mills' activities are being well maintained.

New York—Sheet business is beginning to stir after the relative dullness of the past four weeks. Improvement has been especially noticeable the past few days. Deliveries on most hot rolled products range from two to three weeks, nearer the latter; and on cold finished, five to six weeks. Prices are steady.

Youngstown, O.—New business is rather restricted in comparison with preceding weeks, and a lull is apparent in demand from automobile partsmakers. However, the volume of specifications is large, insuring sustained mill operations. Prices in this district are steady. The market for galvanized sheets is reported unsettled in the Southwest and also in the New York warehouse district.

Philadelphia—The past few days have seen the first notable improvement in sheets since the new year began. Business is still far from brisk, but with inventory season now over, specifications are coming out more freely. Due primarily to demands from the Middle West, shipments are rather extended, particularly the cold finished grades, deliveries on which are five to six weeks off in most cases. The hot rolled items are being offered for delivery in three to four weeks, with few exceptions. Commonwealth of Virginia will open bids Jan. 21 on a carload of hot rolled annealed pickled sheets, No. 24 gage, 11¾ x 82 inches.

Buffalo—The Seneca mills of the Bethlehem Steel Co. continue to operate at 90 per cent. Operation of the cold mill, now nearing completion, it is understood, is not expected until early spring. Sheet orders continue at a good rate, and provide the finished material market with its principal activity.

Cincinnati—Current orders to district sheet mills are for early requirements, in contrast to recent periods when protection against possible price increases was sought. Prices appear steady. Shipments have levelled off to about 75 per cent of capacity, due to reduced automotive demand.

Birmingham, Ala.—All sheet mills are keeping to the rate that was set some time back and indications point to this continuing for a long time.

Transportation

Track Material Prices, Page 51

Additional rail tonnages are being placed, adding to mill backlogs, which will carry rolling schedules well into the year. Southern Pacific has distributed 40,769 tons of 112-pound rails, recipients not being disclosed, though Colorado Fuel & Iron Co. probably will take most. About 9500 tons of tie plates, spikes and bolts also have been distributed by this road.

Southern Railway has placed 3000 tons of 100-pound rail with the Tennessee Coal, Iron & Railroad Co., in addition to the 10,000 tons bought in November. Illinois Central has divided 7600 tons, most going to Chicago mills. Among western railroads which have not yet covered their rail needs are the Chicago & North Western, Chicago, Rock Island & Pacific and Chicago, Milwaukee, St. Paul and Pacific, work on estimates being under way. New York Central will open bids on its rail requirements for 1936, 35,000 tons, Jan. 29, with about 3500 tons of accessories, for delivery by June 30.

Chesapeake & Ohio is in the market for 7000 tons of steel for repairs to 1700 hopper cars. Bethlehem Steel Co. is low on the inquiry of the city of Seattle for 500 tons of 82-pound rails for the municipal street railway.

New York, New Haven & Connecticut plans purchase of ten steam locomotives in addition to the ten diesel-electric just awarded. Some additional cars are under consideration by this road, the types not being decided.

Rail Orders Placed

Illinois Central, 7600 tons; 3000 tons to Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., 2300 tons each to Carnegie-Illinois Steel Corp., Pittsburgh, and Inland Steel Co., Chicago.

Southern Pacific, 40,769 tons 112-pound rail, to unnamed interests, and 9500 tons of fastenings.

Southern Railway, 3000 tons 100-pound rail and 1200 tons of fastenings; to Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.; this is in addition to 10,000 tons to same maker in November.

Rail Orders Pending

Seattle municipal railway, 500 tons, 82-pound; Bethlehem Steel Corp., Seattle, low.

Car Orders Placed

Bangor & Aroostook, 50 rack cars 50 tons capacity, to Magor Car Corp., New York.

Paulista Railway, Brazil, 400 box cars, to Pullman-Standard Car Export Corp., New York.

Locomotives Placed

Chicago, Burlington & Quincy, three 4-8-4 type locomotives, to own shops.

New York, New Haven & Hartford, 10 diesel switching engines, five from Cooper-Bessemer Corp., Mount Vernon, O., and five from Ingersoll-Rand Co., New York.

Seaboard Air Line, one switch engine and six locomotive tenders of 16,000-gallon capacity, to Baldwin Locomotive Works, Eddystone, Pa.

Locomotives Pending

National Railways of Mexico, five locomotives of 2-8-0 type, comtemplated.

Buses Booked

Public Service Co-ordinated Transport, Newark, N. J., 65 super-service type motor coaches and 25 all-service coaches, to General Motors Truck Corp., Detroit.

Pipe

Pipe Prices, Page 51

Chicago—Bids on 7000 tons of cast pipe for Cicero, Ill., slightly exceeded the appropriation for this work and new bids will be taken late this month. While the market is less active than a short time ago, a number of old PWA projects are to be rebid. Orders for small lots remain in fair number and current bookings are regarded as satisfactory.

New York—Pipe and tube demand is showing appreciable increase. Pipe line tonnage pending is negligible but there is a noticable gain in relatively small miscellaneous building requirements and in manufacturers' specifications. Public utility improvements now coming up for figures involve fair tubular tonnages. More tubing is now being figured for shipbuilding than in some time, and sellers are encouraged over the outlook in the railroad field.

Boston—Activity pending in the cast pipe market is 650 tons for PWA projects in Boston, Fore River, Mass., and Meriden, Conn. Additional PWA tonnages are expected to come out shortly. Private buying is good, particularly by contractors in connection with miscellaneous work.

Philadelphia—An increase in commercial pipe specifications is noted here. In few, if any, cases have individual tonnages been large, but orders have been more numerous, for miscellaneous public jobs in the district.

Buffalo—Outlook for pipe sales in coming months is good in this district. This is true both of the water and oil types of pipe and fittings. Federal financing has been provided for a large amount of waterworks extension, while large drilling programs indicate heavy purchases of pipe in the Bradford oil fields. There also is some new gas line construction in prospect from natural gas fields near here.

Birmingham, Ala.—All pipe shops of the Birmingham district have fairly good backlogs now and are producing and shipping at a steady rate. This condition will hold for some time, bids being out on a considerable tonnage. Much pipe is scheduled for the West Coast.

San Francisco—Demand for cast pipe is well maintained and awards so far this year are considerably in excess of the tonnage booked for the same period in 1935. The largest new inquiry involves 670 tons of 4 and 6-inch pipe for Oakland, Calif., up for bids on Jan. 22. Antioch, Calif., will call for bids soon for 1200 tons.

Seattle—Inquiry is not as active as a month ago, although some new projects are pending. McCammon, Idaho, opened bids for 350 tons, with Pacific States Cast Iron Pipe Co., Provo, Utah, and Waterworks Equipment Co., Salt Lake City, submitting identical low bids. Mitchell, Oreg., will open bids Jan. 24 for about 20,000 feet of 4 and 5-inch steel dipped and wrapped pipe, accessories and diversion dam intake structures.

Cast Pipe Placed

225 tons, water line, Alger, O., to James B. Clow & Son, Chicago.
103 tons, 6 to 12-inch, Fullerton, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.
100 tons, 6 to 30-inch, Class B, New Brunswick, N. J., to Donaldson Iron Works, Emaus, Pa.

Cast Pipe Pending

7000 tons, Cicero, Ill.; Bids rejected, new bids Jan. 31.
670 tons, 4 and 6-inch, Oakland, Calif.; bids Jan. 22.
400 tons, East Gary, Ind.
350 tons, McCammon, Idaho; Pacific States Cast Iron Pipe Co., Provo, Utah, and Waterworks Equipment Co., Salt Lake City, low.
349 tons, 6 and 8-inch, McCammon, Idaho; Pacific States Cast Iron Pipe Co., Provo, Utah, low.
330 tons, 16-inch class B, Boston, PWA grants; Warren Foundry & Pipe Corp., Phillipsburg, N. J., low.
267 tons, 4 to 12-inch, King county, Wash., district No. 2; bids Feb. 8.
273 tons, 6 and 8-inch, Fresno, Calif.; bids in.
220 tons, PWA work, Meriden, Conn.; on 100 tons of 6-inch, Warren Foundry & Pipe Corp., Phillipsburg, N. J., low; on 120 tons of 16-inch; R. D. Wood & Co., Florence, N. J., low.
216 tons, 4 to 10-inch, Seal Beach, Calif.; bids in.
213 tons, 4 to 8-inch, Fresno county water works district No. 2, Fresno, Calif.; bids in.
115 tons, 6 to 18-inch, Tacoma, Wash.; bids in.
100 tons, 8 and 12-inch class 150, PWA work, Fore River, Mass.; R. D. Wood & Co., Florence, N. J., low.
Unstated tonnage, 1936 requirements, Cambridge, Mass.; Warren Foundry & Pipe Corp., Phillipsburg, N. J., low.

Steel Pipe Pending

Unstated tonnage, about 20,000 feet of 4 and 5-inch, dipped and wrapped, Mitchell, Oreg.; bids Jan. 24.

Strip Steel

Strip Prices, Page 51

Cleveland — Strip mill operations continue strong, in Cleveland at capacity, apparently there being more pressure for deliveries to automobile manufacturers and partsmakers than for sheets. Deliveries generally are two weeks after receipt of orders.

Chicago—Strip demand is holding fairly well despite a moderate letdown in automotive buying. Active demand continues from a large number of smaller consumers. Prices are fairly steady.

Pittsburgh—The lull in new buying of both hot and cold-rolled strip continues and specifications have fallen off somewhat in volume from others as well as auto partsmakers. However, the mills during the final month of last year had accumulated such good backlogs that they are able to continue operating at 50 per cent.

Philadelphia—A slight gain is reported here in specifications for narrow strip. Demand is purely miscellaneous and is still far from brisk. Hot strip is holding at 1.85c, Pittsburgh, or 2.16c, Philadelphia, and cold strip at 2.60c or 2.91c.

Wire

Wire Prices Page 51

Cleveland — Demand for manufacturers' wire is holding up exceptionally well, being much higher than in January last year. Requirements of bolt and nut manufacturers lead a diversified list. Shipments to rural districts, generally slow at this time, show no change. A leading producer has had agents surveying the agricultural markets since the AAA was dissolved, and is impressed by the absence of complaints from farmers. Last quarter's wire rod contracts have been practically completed—Jan. 15 was to be the deadline on shipments—and some substantial new orders have been booked at $40, base, Cleveland, up $2.

Chicago — Wire demand retains the improvement which developed immediately after Jan. 1. Business in manufacturers' wire continues in relatively better volume than in wire products, though some jobbers are commencing to add to their stocks. A reduction in requirements of the automotive industry is in prospect, though this is expected to be only temporary. Prices are steady.

Boston—Specifications for steel wire and wire products have gained but do not yet equal the November rate. The market on bright, basic and bessemer wire continues firm at 2.40c, base, Worcester.

Philadelphia — Wire specifications have shown no gain so far this month. Consumers laid in a little tonnage in December in anticipation of an advance around the first of the year, an increase that in effect actually did materialize in wire nails, and are buying sparingly now. In wire nails, the market after dipping as low as 2.20c, Pittsburgh, in the closing weeks of last year, steadied at the official price of 2.40c, Jan. 1, with a $2 differential to jobbers.

Shapes

Structural Shape Prices, Page 50

Cleveland—Some industrial engineering firms here purchased a considerable tonnage of structural shapes, in the aggregate, for buildings in various locations. Orders ranging from 25 to 50 tons are fairly plentiful. In public work, steel for schools feature awards. Fabricated prices are soft.

Chicago—While plain shape sales and specifications are increasing, inquiries and awards in the fabricated market are light. Indianapolis takes bids next month on 2000 tons for a postoffice addition, while bids closed last week on 3000 tons for Illinois highway bridges. Awards include 600 tons for a centennial building at Dallas, Tex.

Boston — Fabricating shops in New England start the year under much more favorable conditions than in several years passed. There is an extensive list of pending work shortly, mainly PWA projects. In metropolitan Boston alone there are 58 PWA building projects for which money has been allotted, including numerous PWA grade crossing projects. Desmond & Lord. have been appointed architects for the proposed 18-story Suffolk county courthouse, to be erected here, with PWA money. It is expected this will require approximately 3000 tons.

Philadelphia—Pending formal approval of general contracts by the PWA, delay in the placing of contracts on many jobs up for bids early in December continues. This has resulted in relatively little shape tonnage being placed. New work includes approximately 500 tons for a hangar for the Philadelphia navy yard, bids Jan. 22. Shape prices are unchanged at 1.90c, Bethlehem, or 2.01½c, Philadelphia.

San Francisco—Awards are firm with the outstanding tonnage being taken by the Bethlehem Steel Co., Bethlehem, Pa., amounting to 900 tons for a hangar at Santa Monica, Calif., for Douglas Aircraft Co.

Shape Contracts Placed

4200 tons, bridge, Weldon Springs, Mo., to Stupp Bros. Bridge & Iron Co., St. Louis.

3425 tons, Torrence avenue bridge, Chicago, to American Bridge Co., Pittsburgh.

2600 tons, milk distribution depot, Richmond Hills, N. Y., for Sheffield Farms Co., to Bethlehem Steel Co., Bethlehem, Pa.

2000 tons, municipal auditorium, Oklahoma City, Okla., Mississippi Valley Structural Steel Co., Decatur, Ill.

1135 tons, high school, Providence, R. I., to Bethlehem Fabricators Inc., Bethlehem, Pa., through C. T. Wills Inc., New York.

900 tons, hangar, Santa Monica, Calif., for Douglas Aircraft Co., to Bethlehem Steel Co., Bethlehem, Pa.

830 tons, Parklawn federal housing project, Milwaukee, to Concrete Steel Co., Chicago.

790 tons, Madison Square postoffice, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa., through DMW Contracting Co., Brooklyn, N. Y.

785 tons, bridge ERP 1 in Llano county, Texas, to Mosher Steel & Machinery Co., Dallas, Tex.

750 tons for high school at Fitchburg, Mass., to New England Structural Co., Boston, through Turner Construction Co., New York.

600 tons, coal tipple, Holden, W. Va., to Virginia Steel Works, Chicago.

600 tons, centennial building, Dallas, Tex., to Bethlehem Steel Co., Bethlehem, Pa.

560 tons, Hendrick Hudson parkway, New York, to Fort Pitt Bridge Works, Pittsburgh, through P. T. Coxe Contracting Co., New York.

445 tons, extension to Chevrolet Motor Co. power house, Detroit, to Whitehead & Kales Co., Detroit.

435 tons, Washington trade school, Pittsburgh, to Keystone Engineering Co., Pittsburgh.

425 tons, crossing, Stockton, Calif., to Judson-Pacific Co., San Francisco.

400 tons, postoffice, station D, New York; Wallin Corp., New York, general contract.

350 tons, public school No. 207, New York, to Harris Structural Steel Co., New York, through Lundin Halwer Corp., New York.

325 tons, bridge at Byers, Colo., to Midwest Steel & Iron Works, Denver, Colo.

315 tons, Michigan state highway bridge, Grandville, Mich., to the R. C. Mahon Co., Detroit.

300 tons, sanitorium, Wallum Lake, R. I., to Bethlehem Steel Co., Bethlehem, Pa., through C. T. Wills Inc., New York.

300 tons, bridge, at Canterbury, Conn., to Fort Pitt Bridge Works, Pittsburgh.

280 tons, state bridge, Grant county, Washington, to Virginia Bridge & Iron Iron Works, Roanoke, Va.; D. Nygren, Seattle, general contractor.

270 tons, postoffice and courthouse extension, Huntington, W. Va., to Ingalls Iron Works Co., Birmingham, Ala.

235 tons, Army street crossing, San Francisco, to Judson-Pacific Co., San Francisco.

225 tons, state bridge in Seattle, Queen Anne avenue, to Wallace Bridge & Structural Steel Co., Seattle; General Construction Co., Seattle, general contractor.

220 tons, overpass, Cheyenne county, Colorado, to American Bridge Co., Pittsburgh.

215 tons, city garage, Cleveland, to Fort Pitt Bridge Works, Pittsburgh.

215 tons, Burgwin school, Pittsburgh, to Keystone Engineering Co., Pittsburgh.

210 tons, building, for Morgan Packing Co., Austin, Ind., to Central State Bridge & Structural Co., Indianapolis.

205 tons, electric repair and diesel pump building, Canton, O., to Burger Iron Co., Akron, O.

200 tons, highway bridge, Peru, Ind., to Bethlehem Steel Co., Bethlehem, Pa.

190 tons, for I. C. Ketler, dormitory, Grove City, Pa., to Pittsburgh Bridge & Iron Works, Pittsburgh.

190 tons, bridge, at Tracy, Calif., for Southern Pacific railroad, to Bethlehem Steel Co., Bethlehem, Pa.

188 tons, two schools in Toledo, O., and one in Napoleon, O., to Bethlehem Steel Co., Bethlehem, Pa.

180 tons, piling, from Bay State Dredging & Dock Co., Boston, for work for Metropolitan Coal Co., Boston, to Jones & Laughlin Steel Corp., Pittsburgh.

170 tons, subway, San Jose, Calif., to Judson-Pacific Co., San Francisco.

170 tons, St. Paul railroad deck girder span, Mason City, Iowa, to a Milwaukee fabricator.

160 tons, town hall garage, West Orange, N. J., to Oltmer Iron Works, Jersey City, N. J.

150 tons, high school, Mt. Vernon, Ill., to Mt. Vernon Car Mfg. Co.

150 tons, municipal auditorium, Shawnee, Okla., to Capital Steel & Iron Works, Oklahoma City, Okla.

145 tons, high school, Westminster, Md., to Maryland Steel Products Co., Baltimore.

138 tons, under crossing near Denver, Adams county, Colorado, to unnamed interest.

130 tons, NRM 581-D bridge, Taylor county, Texas, to Mosher Steel & Machinery Co., Dallas, Tex.

130 tons, state highway project 6661 Hamlet, N. C., to Southern Engineering Co., Charlotte, N. C.

120 tons, high school, Abington, Mass., to West End Iron Works, Cambridge, Mass.

120 tons, bridge, Akron, Canton & Youngstown railroad, to Burger Iron Co., Akron, O.

115 tons, postoffice building, Pottsville, Pa., to Reading Steel Products Co., Reading, Pa.

110 tons, general aged peoples home, Baltimore, to Dietrich Bros., Baltimore.

100 tons, storage plant for Pennzoil Co., Mt. Vernon, Calif., to unnamed interest.

Shape Awards Compared

	Tons
Week ended Jan. 20	**26,841**
Week ended Jan. 13	**24,216**
Week ended Jan. 4	**20,075**
This week, 1935	**14,222**
Weekly average, 1935	**17,081**
Weekly average, 1936	**23,710**
Weekly average, December	**23,300**
Total to date, 1935	**47,491**
Total to date, 1936	**71,132**

Shape Contracts Pending

2000 tons, postoffice extension, Indianapolis; bids Feb. 4.

1800 tons, extension of federal reserve bank building, Washington.

1600 tons, section of elevated express highway from West Seventy-ninth to West Eighty-second streets, New York.

1000 tons, public school No. 234, Brooklyn, N. Y.

725 tons, highway bridges, at Thornton and Dufort, Idaho.

500 tons, hangar, Philadelphia navy yard; bids Jan. 22.

500 tons, state highway bridge at Grand Junction, Colo.

470 tons, hospital and administration building, Burrilville, R. I.

450 tons, highway bridges, Indiana; bids Feb. 4.

400 tons, building, for Florence Stove Co., Gardner, Mass.

350 tons, Eastern high school building, Baltimore.

350 tons, separation project, Salem, Oreg.; Kern & Kibbe, Portland, Oreg., low.

300 tons, highway bridge, Plymouth township, state of Pennsylvania.

300 tons, store building for G. C. Murphy Co., Washington.

300 tons, Potato Slough bridge, San

Joaquin county, California; bids open.

250 tons, Swinomish bridge, Skagit county, Washington; bids at Mount Vernon, Wash., Jan. 18.

235 tons, public school No. 127, New York.

200 tons, Ward I building, Cranston, R. I., general contract to Carey Construction Co., Fall River, Mass.

200 tons, warehouse for General Motor Parts Co., Long Island City, N. Y.

200 tons, medical and surgical building, Cranston, R. I.; plans are being revised.

200 tons, vocational school, Elizabeth, N. J.; bids Jan. 21.

200 tons, state bridge, Montgomery county, Pennsylvania; bids opened Jan. 17

200 tons, postoffice, Quincy, Ill.

194 tons, state over-crossing, Pinkwater, Spokane county, Washington; bids Jan. 2.

180 tons, state bridge, Logan county, Ohio; bids Jan. 28, highway commission, Columbus, O.

177 tons, state highway bridge, St. Johnsbury, Vt.; bids open Jan. 24.

175 tons, infirmary, Cranston, R. I., E. Turgeon, Providence, R. I., low on general contract.

150 tons, sanitarium for disturbed women, Cranston, R. I., Matthew Cummings Co., Boston, low on general contract.

150 tons, sanitarium for disturbed men, Cranston, R. I., Matthew Cummings Co., Boston, low on general contract.

120 tons, academic and administrative centers reform school at Cranston, R. I., general contract to O. D. Purrington & Co., Providence, R. I.

100 tons or more, state bridge Owyhee river, Oregon; C. J. Montag, Portland, low.

100 tons, tubercular ward, Cranston, R. I.; plans being revised.

Unstated tonnage, Curtis high school addition, Richmond, Staten Island, N. Y.; bids asked.

Unstated, 696 foot state bridge Snake river, Idaho; bids in.

Unstated, 262 foot overspan, Bonner county, Idaho; bids in.

Unstated, 3-span, truss bridge, Missoula river, Montana; bids soon.

Unstated, state overpass, Helena, Mont.; bids Jan. 20.

Unstated, state overpass, Pendleton, Oreg.; Colonial Construction Co., Spokane, low.

Unstated tonnage, state highway bridge, Freeport, Me.; bids opened.

Unstated tonnage, pier No. 1, navy yard, Charlestown, Mass.; bids to be asked soon.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 54

New business in bolts, nuts and rivets still is rather slow and quotations on bolts and nuts have yet to be tested thoroughly. Rivet prices are steady.

Consumption is holding at a high rate among farm implement manufacturers in the Chicago district and some miscellaneous users also are back to their pre-holiday rate of consumption. Railroad shops are taking larger lots than a year ago, but demand from freight car builders still is light.

At Cleveland, no recession is noted in bolt and nut demand from automobile manufacturers. Railroads are taking relatively little, and jobbers' orders are only fair. Prices are firmer.

Reinforcing

Reinforcing Bar Prices, Page 54

New York—Awards aggregated more than 4100 tons, all public work. Of this total 1786 tons are for New York and the remainder for New Jersey work. The leading new project involves 2500 tons for resettlement work at Branchville, Md. Prices continue to range from 2.40c, base, delivered, in this district for domestic bars.

Chicago—While awards recently have been light, a large tonnage is pending for various projects, principally sewer and bridge work. Oak Park, Ill., has awarded general contracts for a sewer involving 900 tons, with several hundred tons pending for similar work for the city sanitary district. Awards include 400 tons for a Muskegon, Mich., waterworks. Private building usually calls for only small lots. Weakness still characterizes reinforcing bar prices.

Cleveland — Bids on 33 miles of new road work and improvements in Ohio, requiring a moderate tonnage of reinforcing bars, will be taken at Columbus, Jan. 17 and 28. Several small lots are pending for Cleveland schools. The market is quiet.

Boston—Concrete reinforcing bars usually are bringing 2.46c, base, delivered in the Boston area, equivalent to 2.10c, Buffalo, plus the freight rate of 36 cents per 100 pounds. On desirable orders this figure is being shaded by as much as $3 a ton.

Philadelphia—Delay by the PWA and WPA in granting formal approval of general contracts on many jobs, up for bids early in December, is restricting business in this district. Few jobs of size have been placed recently. Meanwhile, prices reflect the weakness noted in certain adjoining districts, although concessions have not been as sharp.

San Francisco—Awards are strong being featured by 8550 tons for precast concrete pipe for the metropolitan water district, Los Angeles. American Concrete & Steel Pipe Co., who secured the contract, has placed this tonnage with an unnamed producing mill. Five thousand five hundred tons for the same project have not been placed.

Pittsburgh—The largest business pending is the Fort Peck project requiring 4500 tons on which army engineers at Kansas City, Mo., will open bids Jan. 27. Adverse weather is holding up an increasingly large number of highway and building projects.

Concrete Awards Compared

	Tons
Week ended Jan. 20	**13,543**
Week ended Jan. 13	**9,352**
Week ended Jan. 4	**2,440**
This week, 1935	**2,489**
Weekly average, 1935	**6,862**
Weekly average, 1936	**7,778**
Weekly average, December	**8,282**
Total to date, 1935	**9,987**
Total to date, 1936	**23,335**

Reinforcing Steel Awards

1300 tons, New Jersey approach to Hudson midtown tunnel, to Truscon Steel Co., Youngstown, O., through George M. Brewster, Bogota, N. J.

1000 tons, sewer, Welfare Island, N. Y., to Joseph T. Ryerson & Son Inc., Chicago, through Rogers & Haggerty, New York.

786 tons, to W. Ames & Co., Jersey City, N. J., from state procurement division, treasury department, New York.

700 tons, New Jersey highway, route 6, section 7, to Truscon Steel Co., Youngstown, O., through George M. Brewster, Bogota, N. J.

513 tons, crossing, Calwa, Fresno county, California, to Bethlehem Steel Co., Bethlehem, Pa.

415 tons, including 78 tons steel, raising Arrowock dam, Boise, Idaho, to T. E. Connolly Inc., San Francisco.

400 tons, New Jersey highway, route 34, section 5, to Truscon Steel Co., Youngstown, O., through S. J. Groves & Sons, Ridgefield, N. J.

400 tons, Sheffield farms garage, Richmond Hills, N. Y., to Truscon Steel Co., Youngstown, O.

400 tons, waterworks, Muskegon, Mich., to Concrete Engineering Co., Chicago.

350 tons, court house, Kalamazoo, Mich., to Concrete Engineering Co., Chicago.

250 tons, Triboro bridge contract 56, for bulkhead wall, to Joseph T. Ryerson & Son Inc., Chicago, through A. M. Hazell Inc., New York.

225 tons, Riverside drive connection at Dyckman street, New York, to Bethlehem Steel Co., Bethlehem, Pa., through P. T. Coxe Contracting Co., New York.

220 tons, bridge at Manasquan, N. J., to Igoe Bros., Newark, N. J., through Linde & Griffith, Newark.

200 tons, highway by-pass, Hightstown, N. J., to Igoe Bros., Newark, N. J., through Tidewater Building Co., Hackensack, N. J.

200 tons, state bridges and schools in Washington, to Pacific Coast Steel Corp., Seattle.

150 tons, hospital building, 304 North Boyle street, Los Angeles, to Soule Steel Co., Los Angeles.

120 tons, highway bridge, South Amboy, N. J., to Igoe Bros., Newark, N. J., through Franklin Contracting Co., Paterson, N. J.

100 tons, Nassau-Queens Grand Central parkway, to Jones & Laughlin Steel Corp. service, national bridge division, Long Island City, N. Y., through Gifford Construction Co., Jamaica, N. Y.

100 tons, high school, Hempstead, N. Y., to Joseph T. Ryerson & Son Inc., Chicago, through William Kennedy Co., Brooklyn, N. Y.

100 tons, state bridge, Stanislaus county, California, to unnamed interest.

100 tons, construction at Passamoquody dam, Maine, to Barker Steel Co., Cambridge, Mass.

100 tons, two state bridges in Washing-

ton, to Northwest Steel Rolling Mills, Seattle.

Reinforcing Steel Pending

5661 tons, schedules 1-P and 3-P, specification 137, metropolitan water district, Los Angeles, precast reinforced concrete pipe; American Concrete & Steel Pipe Co., Southgate, Calif., low.

2500 tons, for resettlement work, Branchville, Md.

1600 tons, Triboro bridge approach, Queens, N. Y.; P. T. Coxe Contracting Co., New York, contractor.

1280 tons, Macy street subway, Los Angeles; bids open Feb. 5.

900 tons, sewer, Oak Park, Ill.; general contracts placed with Michael Pontarelli, John Marsch Inc., and S. A. Healy Co., Chicago.

900 tons, west side elevated highway addition, New York; James Stewart, contractor.

760 tons, Invit. No. 12-155, treasury department, San Diego, Calif.; bids Jan. 15.

300 tons, high school, Providence, R. I.; C. T. Wills Inc., New York, general contractor.

265 tons, over-crossing at Parkwater, Spokane county, Washington; bids Jan. 21.

265 tons, New Jersey state highway route 25, section 26, bids to be opened Feb. 3.

250 tons, rebuilding Taft high school, Taft, Calif.; bids opened.

200 tons or more, Spokane, postoffice; bids at Washington, Jan. 30.

200 tons or more, pattern shop for Continental Can Co., Seattle; the Austin Co., Seattle, general contractor.

200 tons or more, chemistry building, University of Washington; bids at Seattle, Jan. 22.

160 tons, New Jersey state highway route 25, sections 2A and 3A, bids to be opened Feb. 3.

118 tons, bridge, 232nd street, Bronxville, N. Y.; Doyle & Doyle, White Plains, N. Y., contractor.

100 tons, New Jersey state highway route 33, section 36, general contract to Fred McDowell, Neptune, N. J.

100 tons, city hall and jail, Tulare, Calif.; bids opened.

100 tons, two state bridges in Washington; bids in.

100 tons or more, state concrete span at Dairy, Oreg.; E. F. Philpott, Portland, Oreg., general contractor.

100 tons or more, state underpass, Klamath county, Oregon; G. I. Stebbins, Klamath Falls, low.

Unstated, state office building; bids at Olympia, Wash., Feb. 5.

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Iron Ore

Iron Ore Prices, Page 53

Cleveland—Lake Superior iron ore stocks at lower lake ports and furnaces Jan. 1 were 3,000,000 tons less than on Jan. 1, 1935, according to the Lake Superior Iron Ore association. Following is its report:

	Tons
Ore consumed in November	3,025,694
Consumed in December	3,087,236
Increase in December	61,542
Consumed in December, 1934	1,505,751
On hand at furnaces Jan. 1, 1936	26,848,219
On Lake Erie docks Jan. 1, 1936	5,093,441
Total at furnaces and Lake Erie docks Jan. 1, 1936	31,341,660
Total Jan. 1, 1935	34,340,023

Philadelphia—Brazilian iron ore to the amount of 6100 tons arrived here recently for shipment, it is said, to Birdsboro, Pa.

Ferroalloys

Ferroalloy Prices, Page 52

New York—Ferromanganese shipments have been fairly heavy since the first of the month, consumers having specified lightly for material over the closing weeks of 1935 in view of the contemplated reduction which became effective at $75, duty paid, seaboard, Jan. 1. Domestic spiegeleisen, 19 to 21 per cent, is moving in fair volume at the unchanged prices of $26, Palmerton, Pa., on lots up to 50 tons, and $24 on 50 tons and over. Of interest to the trade was the recent arrival at Philadelphia of 483 tons of spiegeleisen from Soviet Russia. This is the first tonnage of Russian spiegeleisen to have been reported at this port. In December 50 tons of Russian spie-

geleisen came in at Baltimore and this is believed to have been the first from Russia in a long time. Domestic prices are being shaded by Russian sellers in order to obtain a foothold here in this market, it is said.

Pig Iron

Pig Iron Prices, Page 52

Cleveland—Carnegie-Illinois Steel Corp. blast furnace stack at the Central furnaces here, which was to have been blown in early this month for merchant iron business, will not get under way until Feb. 9. New orders for merchant pig iron generally are coming in slowly, melters having substantial stocks. Foundry coke consumption is holding up practically to the December average, indicating a correspondingly high rate of pig iron consumption.

Chicago—While January pig iron shipments are expected to be only about one-half the December total, consumption is about equal to the rate of a month ago. New business is appearing regularly and though most orders involve 500 tons or less, the current reduction in melters' stocks is expected to stimulate more active buying within 30 days. Some decrease is noted in production of automotive castings, but operations elsewhere are well maintained.

Pittsburgh—Small lots of foundry and special bessemer irons are involved in current sales, but new business of size is slow in appearing. Consumers, including foundry interests and heavy machinery builders, are specifying early delivery on most new business.

New York—Pig iron sellers are distinctly encouraged over the improvement in foundry melt in this district. Not all foundries are sharing in this increase, but some are experiencing the best operations in many weeks. New specifications in general continue slow.

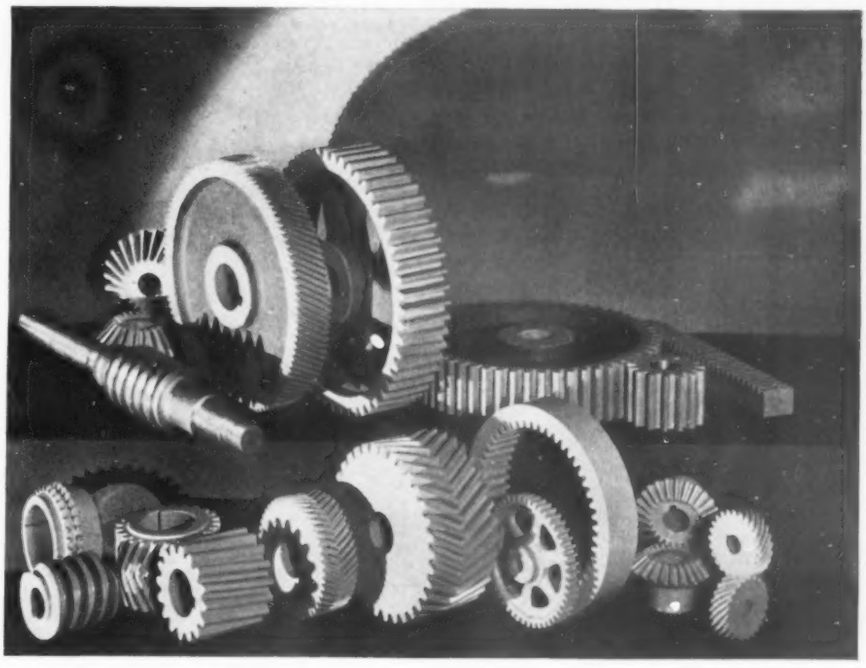
Boston—Because of accumulations of pig iron stocks before the recent price advance, consumers are not buying noteworthy tonnages. Melt is heavy, with promise of continuance at the present or an improved rate. The once large stocks at the Everett, Mass., furnace have been stripped to the point where only low-silicon iron remains. It is likely this furnace, after idleness of more than four years, will resume blast soon. While stocks of Russian iron at New England ports are low, it is understood substantial tonnage is on the way from Black sea ports.

Philadelphia—Attention has been focused on recent arrival here of 3579 tons of iron from Russia and 3208 tons from the Netherlands. This is the second sizable cargo of Russian iron within recent weeks, in addition to the Royal Dutch shipments which have been coming into this port for many months. Most of this Russian iron is said to be for district cast pipe foundries. Domestic pig iron sellers report specifications light, as was expected in view of the heavy shipments in the closing weeks of last year against orders placed prior to the price advance Nov. 1.

Birmingham, Ala.—Spot orders are again numerous and specifications for immediate delivery, plus instructions on tonnage sold for delivery during January, are causing active movement of iron from blast furnaces, twelve of which continue in operation.

Buffalo—Melt of pig iron in district open hearths has been dropping steadily and some merchant sellers fear the effect of accumulation of surplus tonnage in steelworks. The current market is better than had been expected, however, as many consumers apparently underestimated fourth quarter melt.

Cincinnati — Furnace interests,



"HARD-DUR" STEEL GEARS
preserve the tooth form . . .

● When gears are in operation, tooth pressure tends to destroy the involute curve and as this wear progresses the gears no longer run efficiently.

Horsburgh & Scott "HARD-DUR" gears not only have involute teeth that are produced to very high standards of accuracy by very careful and painstaking workmanship, but the material is highly wear resistant. In fact, "HARD-DUR" gears possess strength, hardness and wearing qualities so much greater than similar untreated gears that they are guaranteed to have four to five times the life at a cost of only about 50% extra. Their economy is quite apparent.

A 448 page Gear Book is yours for the asking.

THE HORSBURGH & SCOTT CO.
GEARS AND SPEED REDUCERS
5112 HAMILTON AVENUE, CLEVELAND, OHIO, U. S. A.

after a survey, find the carryover of pig iron not excessive and therefore predict gradual improvement in sales throughout this month. Some contract iron, at October prices, is yet to be specified. Current sales are firm at the $1 advance, and these include some contracts for first quarter needs, in addition to spot shipments. Tonnage now being moved is down sharply from the November- December levels.

Toronto, Ont.—Merchant sales showed a sharp upswing during the past week. While foundries are furnishing a large part of current demand, agricultural implement makers and radiator companies also are buying in larger tonnages than formerly. Production is holding at a high level, with five stacks blowing. Prices are firm.

Seattle—Demand is somewhat improved although steel foundries have more orders than iron plants. Prices are unchanged.

Metallurgical Coke

Coke Prices, Page 51

Connellsville coke producers have started the new year at a higher operating rate than in several preceding Januarys. An increasing volume of small business is coming to beehive ovens from both gray iron and malleable foundry interests, making a fair total of new business. Prices continue unchanged at around $3.50 to $3.60, ovens.

Demand for by-product coke is holding well and practically duplicates the December rate in practically all centers, with prices steady.

Scrap

Scrap Prices, Page 53

Philadelphia—Heavy purchase of No. 1 and No. 2 steel for shipment to Coatesville, Pa., at $12.50 and $11.50, respectively, features the eastern Pennsylvania scrap market. This brings purchases of steel scrap within the past fortnight up to approximately 40,000 tons, exclusive of what the Bethlehem Steel Co. has purchased.

All this scrap has been obtained at unchanged prices, it is interesting to note, a development which points to a fairly steady market over the next 30 days or so. That steel scrap prices are showing no strong upward tendency in this district for the present, despite earlier trade expectations to the contrary, is further revealed by the action of one large consumer a few days ago in refusing to buy at even $12 a ton, or 50 cents under what was paid by the Coatesville consumer.

Following recent loading of 8000 tons of steel scrap for Italy, another boat is scheduled to arrive here within the next few days to pick up 4000 to 5000 tons for the same destination.

A mill located a little outside of the Pittsburgh district is reported to have taken most of the Pennsylvania railroad steel scrap, about 8000 net tons, at close to $15 a ton.

Pittsburgh—While the iron and steel scrap market here is firm, due to scarcity of material in the open market, in general, prices continue at their former levels. Some railroad steel has been sold by one carrier at slightly above $15, but as yet this strength has not been reflected in the heavy melting steel market by actual sales. Shipments continue fair, but both brokers and dealers are loath to make new contracts because of the difficulty in later covering.

Chicago—Relatively high prices paid by dealers and brokers attest to strength in scrap. A recent railroad offering of heavy melting steel brought $14.15, delivered and the consumers' market has advanced 25 cents a ton on a sale of a moderate tonnage at $13.75. Shipments against

Behind the Scenes with STEEL

On Finishing

A READER writes us to say that he is interested in obtaining information as to whether or not there is any substitute for cadmium plating which will stand up through all types of weather conditions and yet retain its highly lustrous finish.

We suggest that he keep his eye focused each week on our new department "Surface Treatment and Finishing." If he doesn't find the answer to his troubles there, in addition to a lot of other valuable information, we miss our guess. This timely department has been planned to supply the needs of a veritable bevy of manufacturers who want to know more about surface finishing and its many ramifications. (Back up to p. 32)

• • •

Voice of Industry

FROM the flood of letters received following publication of STEEL's Yearbook of Industry issue Jan. 6 (remember?) we have combed a few of the more interesting (and flattering) excerpts. It would be physically impossible to present portions of all letters received, so if you don't see your words here, please pardon the omission. Anyway, they tell us the Yearbook was:

"Most complete compilation of facts and the most artistically arranged and printed magazine that has ever been brought to my attention."

". . . a marvelous piece of publication work and a credit both to the publishing industry and to the steel industry which it represents . . . A masterpiece even to the printing and the binding which allows it, despite its size, to lie flat on a desk."

". . . truly splendid Yearbook."

". . . easy to find the reading matter which you have seen fit to pretty well segregate separate and distinct from the advertising."

". . . a very handsome publication."

". . . I shall find plenty of good use for it."

". . . an exceptionally fine issue and undoubtedly of great assistance to all readers."

". . . good drawings on the opening pages for each industry."

"Your paper's assistance during the past year has helped make us known to a constantly widening field of users."

". . .as fine an example of a trade paper as it has ever been my privilege to examine . . . Some of the advertisements in this issue are the finest I have ever seen and are equal to, if they do not surpass, the best that I have observed in Fortune and other similar magazines."

". . . particularly like the way you have arranged the material . . . It should be appreciated by every man in the industry."

". . . truly a magnificent publication and reflects the vast amount of preparation . . . put into it."

". . . has aroused an unusual amount of favorable comment."

". . . exceptionally fine piece of work."

• • •

Blue Ribbons

MANY exceptionally fine advertising pages were included in the issue, as you know. It would be difficult to mention them all, but we were particularly impressed with those of Berger Mfg. Co., Tinnerman Stove & Range

Co., Empire Sheet & Tin Plate Co., Andrews Steel Co., American Rolling Mill Co., Jessop Steel Co., National Steel Corp., United Engineering & Foundry Co., Wean Engineering Co., Socony-Vacuum Oil Co., John A. Roebling's Sons Co., Norton Co., and Paul Maehler Co. Nice going, boys!

• • •

Billet Doux

IN OUR perverse way we have been rummaging around trying to find one or two letters which griped about something, or contained some nasty insinuation, but our Vice President in Charge of Rebuffs must have sifted out all those at the start.

We haven't had time to write our letter to the editor yet, because of the press of writing letters to newspaper editors about the Townsend plan, the Bonus and the Cleveland Hi-Y boys' definitions of necking and petting. Might as well do it now.

Dear Editors of STEEL:

Received your *Yearbook of Industry* and read it over. It's all right.

(signed)

—SHRDLU

contracts will be completed soon and a more active participation of mills in the market is expected.

New York—The principal transaction in the domestic scrap market is a purchase of specification pipe at $11, delivered to an eastern Pennsylvania consuming point. As a result, as high as $7.25 per gross ton has been paid by dealers for this grade aboard cars in greater New York. The market now is quoted at $6.75 to $7.25, f.o.b. New York, compared with the previous level of $4 to $4.50 which was entirely nominal. Dealers had been breaking this grade into heavy melting steel shipments.

On export purchases dealers are paying the following prices, delivered docks in New York or Brooklyn: No. 1 heavy melting steel $9; No. 2 or auto steel $8; stove plate $7.

Buffalo—The stalemate in scrap continues. Mills admit early need of tonnage but will not meet dealers' ideas of prices. Shipments are being made on contracts but the amount of such business is comparatively small. Everybody looks for early buying.

Cincinnati—Mills having covered immediate needs earlier this month, current sales of iron and steel scrap are in small, miscellaneous lots. Brokers are fairly well covered on contracts, being wary of short sales requiring entry into the market against the present bullish dealer sentiment. Mills are accepting material freely but have returned to apathy toward new commitments.

Youngstown, O.—Good scrap continues scarce and due to actual absence of good material or the disposition of dealers to hold off the market. Sharon Steel Hoop Co. recently bought some small lots of No. 1 heavy melting around $13.50 but the tonnage is not believed to be large.

Detroit — Scrap prices are unchanged. Offerings by automobile and parts manufacturers are declining, and so is demand from outlying districts, indicating a slackening in steel production. For the long pull, however, the outlook is good.

St. Louis—Iron and steel scrap continues to be characterized by great strength, despite the fact that consumers, particularly steel mills, are purchasing practically nothing.

Birmingham, Ala.—Little improvement in the scrap market is noted. Shipments are in small lots and the aggregate is far from being considered satisfactory. Dealers have good stocks and are meeting demands

Seattle—Local mills are buying in sufficient quantities to replace stocks consumed and prices are being sustained. The export market continues lifeless, due to holidays in the Orient and ample stocks in Japan. Exporting houses do not anticipate an improvement in the Japanese market for at least 30 days.

Toronto, Ont. — Trading in iron and steel scrap is showing steady expansion and shipments are better than at any time in three or four years. Shipments largely are to Hamilton, Ont., although other interests in Ontario and Quebec are showing more interest in steel scrap. Foundries are taking machinery cast, malleable and wrought scrap, and other lines also are becoming more active. Export shipments to the United States are being made and it is stated that several thousand tons of automobile scrap are ready to move across the line. Dealers' buying prices are unchanged.

Warehouse

Warehouse Prices, Page 54

New York—Jobbers are specifying more slowly than some of the larger manufacturing consumers. Prices are steady.

New York—Demand has not yet returned to the December average al-

SPECIAL SEAMLESS SHELLS AND SHAPES

DEEP DRAWN TANKS, BOTTLES, ETC.

IS OUR SPECIALTY

This Square Seamless Drawn Tank is

A Crosby Accomplishment

MADE FROM 3/16" STEEL

12½" DEEP 6⅞" SQUARE

Stamping Specialists Since 1896

An Experience You Should Not Overlook

Send Us Your Next Specification

THE CROSBY COMPANY

BUFFALO, N. Y.

NEW YORK — CHICAGO — PHILADELPHIA — DETROIT — CLEVELAND

though consumption does not appear to be any less than in the pre-holiday period. The situation in galvanized sheet prices due to widespread selling of "seconds," which cannot easily be distinguished from primes, continues, but the market now is more clearly defined, at 4.30c, base, delivered for No. 24 gage in lots up to 499 pounds, 4.16c base for lots of 500 to 1499 pounds and 3.81c for lots of more than 1500 pounds.

Philadelphia—The early part of this month lagged behind the corresponding period in December in point of business; however, the past few days have shown an improvement, with inventory season out of the way, and jobbers are now expecting a satisfactory showing for January. Prices are steady, there having been no change since the $2 a ton advance in cold finished steel Jan. 1.

Chicago—Sales continue active, showing a substantial increase compared with the rate a year ago, and markedly improved since late December. Bars, small shapes and flat rolled material experience best demand. Prices are unchanged.

Baltimore—Prices on cold rolled steel were increased 15 cents per 100 pounds, effective Jan. 15, with flats, squares, rounds and hexagons now quotable at 3.73c. This price carries the new card of extras for quality, and brings the market here in line with the revisions previously put into effect by the mills. Demand is expanding moderately.

Boston—The past week or 10 days have witnessed a decided improvement. The current volume is as good as before the holidays and 25 per cent of a year ago. Prices are unchanged and steady.

Cleveland—A substantial gain over December is noted in tonnage booked by leading warehouse interests here this month. There is a fairly good demand for cold rolled steel and light plates, but structurals are quiet.

Cincinnati—Sales are headed upward from low levels of the holiday period. Industrial needs remain the backbone of the market.

Detroit—Case lots of bolts and nuts are 70 and 10 off, and less-case lots 70 off. Some WPA inquiry for steel has developed and should mature in ten days to two weeks. Warehouse demand generally is well maintained.

Seattle—Buyers show little interest. Business is confined to small lots out of stock. Prices are unchanged. Jobbers are considering an adjustment on shafting to offset the mill increase of 15c Jan. 1 but no action has been taken.

Nonferrous Metals

Nonferrous Metal Prices, Page 52

New York—Heavier buying of nonferrous metals is expected to develop over the balance of January with substantial gains already having been made in copper and lead last week. Prices held steady.

Copper—Sales increased sharply to an average of 2924 tons per day for the first four days of the week compared with only 730 per market for the month previously. Total sales for the month through Thursday amounted to 18,264 tons. Many observers still predict higher prices if the buying movement continues to gain momentum. All first hands quoted unchanged levels on the basis of 9.25c, Connecticut, for electrolytic.

Lead—Consumer buying increased with substantial tonnages still pending for February needs. Lead stocks are heavy despite a moderate decline as of Dec. 1 but are held in strong hands. All producers continued to quote on the basis of 4.35c, East St. Louis.

Zinc—Competitive inquiry for zinc was absent but sales were made to regular customers at the firm market level of 4.85c, East St. Louis, for prime western. Shipments continued at an active rate.

Tin—Business in Straits tin was negligible but prices reflected a fairly steady undertone with spot closing around 47.37½c.

Antimony—Buying interest again was dull with American and Chinese spot holding at 12.62½c.

Silver—Commercial bar silver prices dropped sharply. At the close of the week Handy & Harman quoted foreign metal in the domestic market at 45.75c per ounce which was only 2⅜ cents above the official London price.

Coke By-Products

Coke By-Product Prices, Page 51

New York—Demand for coal tar products generally is good, and prices are firm. Because of the likelihood that present production costs will tend to advance over the coming months, sellers have been careful in setting their sales policies. Instead of contracting both for quality and price for the full year 1936 in distillates, for example, the contracts recently made cover the full year as to requirements, but only the first half as to price.

Steel in Europe

Foreign Steel Prices, Page 54

London—(*By Cable*)—Holiday interruptions brought production of steel ingots and castings in Great Britain in December somewhat short in total and daily average, compared with November. Total output was 811,500 gross tons, a daily average of 33,812 tons, compared with 903,300 tons, a daily average of 34,742 tons, in November. The total for 1935 is 9,842,400 gross tons, compared with 8,859,700 tons for 1934.

Pig iron production was 559,300 tons, compared with 525,100 tons in

Special Carbon and Alloy Spring Wire

IRON STEEL WIRE QUALITY TRADE MARK SENECA

The demand for SENECA Quality Special Spring Wire is increasing rapidly.

We are prepared to meet all demands.

We can supply practically all grades in rounds and SHAPES and sizes from ½" to .004.

HIGHEST QUALITY GUARANTEED

Please send your inquiries with specifications

The Seneca Wire & Mfg. Company
FOSTORIA, OHIO

Established 30 Years

November. The daily average rate in December was 18,042 tons; in November, 17,503 tons. The same number of stacks, 102, was in blast at the end of each month. Total pig iron output in Great Britain in 1935 was 6,422,000 gross tons, compared with 5,978,500 tons in 1934.

Imports of steel and iron into Great Britain in December were 112,993 gross tons, compared with 76,999 tons in November, a gain of 35,994 tons. December exports totaled 190,308 gross tons, compared with 215,835 tons in November, a loss of 25,527 tons. A large part of the increase in imports is due to raising the quota of semifinished steel admitted from the Continent, to make up for shortage of supply from domestic mills.

British steel mills generally are working to capacity and some are hampered by shortage of pig iron, scrap and semifinished steel. Additional furnaces will be lighted as soon as the coal mine labor situation clears up. The Continental import quota for semifinished steel has been increased 33,000 tons monthly for the next three months.

The Continent reports export trade gradually resuming its normal rate, with Great Britain a large buyer of semifinished products.

Semifinished

Semifinished Prices, Page 54

Pittsburgh—Billet and sheet bar needs for the present quarter were covered prior to Jan. 1 and producers' attention is devoted to production and shipments, both of which are at a fair rate. The number of nonintegrated mills turning to the use of hot rolled breakdowns seems to be increasing, thus restricting consumption of sheet bars. Smaller strip mills, however, continue to purchase billets.

New Alloy Steel Item Extras

New item extras replacing lump sum extras are being applied on hot rolled alloy steels, benefiting smaller buyers. The new schedule follows:

6000 lbs. and over	base
5999 lbs. to 4000 lbs.	5c per 100 lbs.
3999 lbs. to 2000 lbs.	15c per 100 lbs.
1999 lbs. to 1000 lbs.	60c per 100 lbs.

Foundrymen Hear Talk on Patternmaking Practice

Approximately 150 members and guests of the Northeastern Ohio chapter of the American Foundrymen's association heard Vaughan Reid, president, City Pattern Works, Detroit, and also president of the Detroit Chapter of the A.F.A. deliver an address on patterns and patternmaking at the Cleveland club, Cleveland, Jan. 16.

Starting with the premise that a pattern is a production tool for the foundry, Mr. Reid stressed the fact that materials and workmanship must be of the highest class. Lumber should be held in the shop for at least a month before it is converted into a pattern. Humidity of the shop should be held to a uniform degree. Glue deteriorates rapidly when exposed and the same is true with shellac; hence these materials should be prepared in small quantities and used immediately.

The speaker held decided views on the composition and method of manipulating aluminum for patterns. In his plant only virgin metals are employed in making an alloy of 90 per cent aluminum, 5 per cent silicon and 5 per cent copper. The metal is melted and cast into ingots and then remelted for pattern use. To prevent oxidation and subsequent pinholes in the castings the metal is poured directly from the melting pot into the mold.

All iron and aluminum pattern castings are annealed or normalized before they are machined. Aluminum castings are held at a temperature of 550 degrees for 6 hours. Steel inserts are placed at the points of greatest wear in aluminum patterns and coreboxes. The speaker instanced one prominent automobile plant in which all iron patterns are plated with 0.005-inch of chromium to increase wear resistance.

QUICKWORK CO. IN NEW PLANT

Quickwork Co., maker of rotary shears, power hammers and other metal working machinery, formerly of St. Marys, O., is now located in its new plant at 900 North Spaulding avenue, Chicago. In addition to its present line, it is now building welded steel press frames, welded steel columns for power hammers and other welded steel assemblies.

Equipment

Chicago—Machine tool buying holds to the improved rate noted early this month. Inquiries also are in relatively heavy volume, one of the largest of these being five tools for the Santa Fe railroad. Inland

THIS is the striking result of composite design as affected by Parish engineering service on a pressure fitting of cast steel that constantly failed under high pressures in service.

Produced of a stamped-and-welded design, this fitting not only split the cost and weight of its former style but successfully tested at 100 lbs. air pressure . . . Similar savings and betterments are likewise possible on *your* manufactured parts. Your blue-prints and specifications will permit this study.

PARISH PRESSED STEEL CO.

Specialists in difficult stamping design

Robeson & Weiser Sts. READING, PA.

Pacific Coast Rep.: F. Somers Peterson Co., 57 California St., San Francisco, Calif.

Steel Co. has closed on six items, including one large lathe. Small tool demand continues active. Steel plants are expected to devote more attention to iron and steel making divisions this year, though, with the exception of Inland Steel Co.'s recently announced program to build four new open-hearth furnaces, most work will take the form of improvements to existing facilities rather than new construction.

New York—High-production machine tools, first brought forcefully to attention of users at the Machine Tool Show no longer are a novelty to metalworking companies, many of which, with volume production problems, are buying these tools actively. Manufacturers of typewriters and other office machines, electrical equipment and others requiring large numbers of duplicate parts in assemblies are buying the new tools actively to replace older units in production lines. As a result of this condition, deliveries on certain tools are deferred until May, June, and even July. Payroll taxes for unemployment insurance are bringing increased pressure for automaticity of equipment.

Seattle — Continued interest in pumping machinery is reported while the logging and lumber industries in Washington and Oregon are making replacements and buying some new equipment.

Construction and Enterprise

Ohio

AKRON, O.—United States Stoneware Co., 50 Church street, New York, is making plans for a new machine shop and metal fabricating building here, for the manufacture of corrosion proof pumps, fans, and exhausters, etching machines, power mixing units, etc. Program includes new storage and processing department building and power plant building.

CLEVELAND—Department of public utilities, division of light and power, city hall, is planning a new ornamental street lighting system on a portion of Ontario street, including standards, cables, transformers, and auxiliary equipment.

CLEVELAND — Contract Welders Inc., 4829 Lexington avenue, has outgrown its space at this location, consisting of 6000 feet, and has leased a 1-story building at 2547 East Seventy-ninth street.

CLEVELAND — Industrial Rayon Corp., West Ninety-eighth and Walworth avenue, Hiram Rivits president, contemplates installation of aerating and ventilating equipment, including air compressors, exhaust fans, air diffusers, piping and ducts leading to compressors, fans, stacks, and other appurtenances. Cost of project is about $40,000, and owner is being consulted by George B. Gascoigne, sanitary engineer, who will probably prepare plans when program matures.

CLEVELAND — Cleveland Corrugated Box Co., 7275 Wentworth avenue, is planning for a storage and distribution plant to cost $28,000 or more with equipment. Architect has not been appointed.

CINCINNATI — Queen City Steel Treating Co., 432 Oliver street, is making plans for a foundry, office, and plant addition on Hopple and Springgrave streets, to cost in excess of $30,000.

CINCINNATI—Union Gas & Electric Co., Fourth and Main streets, is making plans for a power plant, equipment, and addition on the West End station. Columbia Engineering Corp., Cincinnati, is engineer.

DAYTON, O.—Dayton Envelope Co. has been incorporated recently for the production of a complete line of envelope papers. The company has leased the Naval Ordnance building, formerly occupied by the Coffield Washer Machine Co. Officers of the new firm are Maxwell Howard, president; Ward R. Howard, vice president; and H. H. Hoffman, secretary.

DAYTON, O.—Air corps, materiel division, contracting officer, Wright field, asks bids Jan. 30 under circular 36-494, for ingot copper.

DAYTON, O.—Air corps, materiel division, contracting officer, Wright field, asks bids Feb. 3 for vacuum pump assemblies; Feb. 4 for air cooled compressors; Jan. 24 for automatic saw filers.

LACARNE, O.—Proposals are being received by the quartermaster, Erie ordnance department, this city, until Jan. 22 for the sale of 911 lots of automobile parts, motorcycle parts, truck parts, metals, balance and drill presses, etc.

LIMA, O.—Harry F. Rousch, president of Lima Metal Products Inc., announced recently that the plant would be reopened soon. The plant will be converted into a factory to be used for the manufacture of refrigeration novelties, a departure from the strictly refrigerator building program of the past.

LORAIN, O.—Fire, originating in a smelting furnace, caused $3500 loss to the main building of the Lorain Castings Co., Omaha avenue, recently.

TOLEDO, O.—Electric Auto-Lite Co. is reported planning to embark on the manufacture of spark plugs, speedometers, air cleaners, and other automotive parts and accessories.

WEST SALEM, O.—Fire, starting in the engine room, caused $40,000 loss to grain elevators of the West Salem Equity Co. here, recently.

Michigan

BATTLE CREEK, MICH.—Representatives of the George A. Weston Co. Ltd. Toronto, Ont., are considering opening a plant here. R. A. Robertson, president, said that $150,000 would be spent for machinery and equipment. H. C. Beach, formerly with the Kellog Co., will be general manager.

DETROIT—Bids are asked for Jan. 21 by E. H. Bauer, acting secretary of board of water supply, 735 Randolph street, for 1161 feet of ornamental iron fence and 3 entrance gates, 3531 feet of chain link fence with

POSITIVE CONTROL

of air operated machinery is easy to get. Use Hannifin "Packless" Air Control Valves—the simple, efficient, leakproof valves that stay tight without maintenance. No packing troubles, for there is no packing. The bronze disc is ground and lapped to make a perfect seal with the seat. Original efficiency is easily restored after long service by simply re-lapping.

Made in 3-way and 4-way types, hand and foot models, manifold, electric operated, and special valves for controlling all kinds of air and hydraulic equipment. Write for Valve Bulletin No. 34-S.

HANNIFIN MANUFACTURING COMPANY
621-631 SOUTH KOLMAR AVENUE CHICAGO, ILLINOIS
ENGINEERS • DESIGNERS
MANUFACTURERS
Pneumatic and Hydraulic
Production Tool Equipment

HANNIFIN "Packless" AIR CONTROL VALVES

3 strands of barbed wire, and 5 gates, at Springwells station. A PWA project, G. H. Fenkell, 735 Randolph street, is engineer.

DETROIT—Frank J. Novak Foundry Co. has been incorporated for the manufacture of pattern castings, by Frank J. Novak, 1545 Temple avenue, this city.

DETROIT—Chase Tool Co. is contemplating an addition to the front of its building to provide more space for manufacturing activities.

DETROIT—Jackson & Blakely Co., 3500 Fullerton street, has been incorporated to deal in dies and tools, by Harold E. Jackson, 741 Calvert avenue.

DETROIT — Osborne Transformer Corp. has been incorporated to deal in electrical transformers, by Robert L. Osborne, 1313 East Congress street.

DETROIT — Peck Stoker Co., 426 Cass avenue, has been incorporated to manufacture heating appliances, by Charles E. Peck, 8737 Morley avenue.

GRAND RAPIDS, MICH. — American Auto Felt Corp., W. W. Hoagland president, has announced a three-fold expansion program including the inauguration of a bedding division for the manufacture of mattresses, and the introduction of a line of automotive accessories, the manufacture of which will use fabrics produced by the Fibre Cord Co.

MANISTEE, MICH. — Rademaker Chemical Corp. has announced that it will acquire new capital through sale of stock and start at once on a program of expansion, first step of which will be the drilling of a new chemical brine well. John H. Rademaker, head of the company, stated that this will be the beginning of a $75,000 program.

PORT HURON, MICH. — Chrysler Corp., Detroit, announces that operation of the old Wills-Ste. Clair automobile plant at Marysville, Mich., as a service parts plant, will begin in a few months. R. B. Fohey, secretary of the corporation, said work would begin next week on an addition to the Marysville plant, adding a space 50 x 300 feet to the present structure.

SAGINAW, MICH.—North American Petroleum Co. has purchased the old Peerless skimming plant in this city, and will enlarge preparatory to starting operations. It is reported the company has started the construction of an addition which will increase the capacity of the plant to 3000 barrels daily.

TAWAS CITY, MICH.—City is taking new bids for the construction of distribution mains and an elevated steel tank. Bids are due Jan. 24. Francis Engineering Co., Saginaw, Mich., is engineer.

Indiana

ANDERSON, IND.—Motor Master Products Inc., 1532 Jackson street, has been incorporated to manufacture motors and motor parts by Paul Toppes, Wilbur R. Anderson, and C. Herman Huntzinger, 2121 Noble street, resident agent.

BLUFFTON, IND.—General Machine Co. Inc., manufacturer of bread wrapping and cutting machinery, is moving more equipment from its Battle Creek, Mich., plant to its new plant in this city. Upon installation, production will be started on blades, sharpeners, and other parts for the wrapping and cutting machines.

COLUMBUS, IND.—Noblitt-Sparks Industries plans alterations and equipment to the former plant of the recently acquired Lincoln Chair Co., for use as an assembly plant. Cost is to be $28,000 or more.

DANVILLE, IND.—Town board, G. W. Hadley, clerk, soon takes bids on cast iron pipe for watermains. A WPA project, cost will be $14,640.

INDIANAPOLIS — Chapman-Price Steel Co., subsidiary of Continental Steel Corp., Kokomo, Ind., has announced a program of extensions and alterations to its plant at 3000 Shelby avenue, including modernization of equipment. The project, involving the sheet steel, galvanizing, and fabricating plants of the company, requires an expenditure of $500,000. Niles Chapman is president and Louis A. Haerle, vice president of the firm.

LOGANSPORT, IND. — Logansport Machine Inc. has been incorporated to manufacture machinery, by C. H. Wilkinson, 813 North street, resident agent, Allen E. Nelson, B. F. Long, and F. B. Wilkinson.

SOUTH BEND, IND. — Triangle Tool, Die & Engineering Co., 815 East Sample street, this city, has been organized to manufacture machinery. Incorporators are George L. Raffleau, resident agent, Elsie Raffleau, and Ben Becovitz.

Illinois

CHICAGO—Clen-Zit Laboratory Products Co., 1 La Salle street, has been incorporated by J. A. and L. L. Meinhardt and Hermann E. Schlif, to deal in industrial chemicals and products. Correspondent is Barry & Berchtolf, 1 North LaSalle street.

CHICAGO—Consumers Steel & Wire Co., 77 West Washington street, has been incorporated to deal in wire products, by A. Ziv, M. R. Levy, and A. W. Luebke. Correspondent is Weinberg & Weinberg, 77 West Washington street.

CHICAGO—Midwest Die Cutting & Finishing Co., 812 West Van Buren street, has been incorporated to deal in hollow and steel rule dies and easels, by David M. Hirsch, Helga H. Nordin, and Hadar M. Nordin. Correspondent is Charles Brown, 139 North Clark street.

CHICAGO — General Combustion Corp., 855 Ainslie street, has been incorporated by Joseph B. Alexander, Louis Metcoff, and C. W. Carpenter, to deal in furnaces. Correspondent is Joseph B. Alexander, 801 West Madison street.

BATAVIA, ILL. — Campana Corp., this city, plans a plant addition, to cost $100,000.

CHICAGO—Burning Brands Co. has changed its name to the Master Airbrush Corp. Recently incorporated, its correspondent is Brewer, Smith & Farrel, Continental Illinois bank building.

CHICAGO — Columbia Iron Works Inc., 3041 North Rockwell street, has been incorporated to deal in metals, by Rudolph Deutschmann, Curt R. Ritter, and John Kapche. Correspondent is Louis W. Reinecker Jr., 100 West Monroe street.

CHICAGO—Concrete Metal Forms Co., 222 West Adams street, has been incorporated for the manufacture, sale, leasing, and rental of metal forms, by D. W. Housel, Walter J. Quires, and Olney J. Dean. Correspondent is Sinden & Hassell, 139 North Clark street.

Connecticut

HARTFORD, CONN.—City, board of control and supply, will soon take bids for 15 trucks to complete motorization of ash and rubbish collection system. Cost of project is to be $40,000 and funds have been appropriated.

Massachusetts

SALEM, MASS.—Hygrade Sylvania Corp. has announced that it will build a new factory for the manufacture of radio tubes.

Maine

EASTPORT, ME.—An additional

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$2,000,000, government appropriation has been granted for the giant Pasamaquoddy bay tidal power project recently. The return of Lieut. Col. Philip B. Fleming, construction chief, is awaited to signalize a start on final preparations for major construction of the $36,000,000 tide trap.

New York

BUFFALO—Colonial Radio Corp., of this city, is engaged in a $100,000 building expansion program.

CORNING, N. Y. — Corning Glass Works plans a 2-story 180 x 240 foot steel factory, to cost in excess of $28,500.

GENEVA, N. Y.—Public sale of the Summit Inc. foundry plant on Middle street, here, has been officially decided upon. The firm was originally organized as Summit Foundry Co. Trustees are Alexander W. Skinner, Frank A. LaPoint, and Louis A. Rouviere.

NEW YORK — Superintendent, lighthouse service, third district, Staten Island, N. Y., asks bids Jan. 21 under proposal No. 50330, for radio beacon transmitters.

NEW YORK—General Dyestuff Corp., 230 Fifth avenue, will build a 9-story $3,500,000 plant in lower Manhattan commerce center. The corporation is an affiliate of Farbenindustries, large German chemical combine.

NEW YORK—Kienle & Co., 41 Nassau street, Brooklyn, is making plans through W. H. Gompert, 40 East Forty-ninth street, for alterations to its 1-story factory at 51 Nassau street. Project will cost $40,000 with equipment.

SCHENECTADY, N. Y.—A. Wayne Merriam Inc., Erie avenue, is making plans for an electrical appliance factory, to exceed $40,000. The architect has not been appointed.

SYRACUSE, N. Y.—General Motors Corp., Detroit, will resume partial manufacturing operations in the Brown-Lipe-Chapin plant here next month. When a section of the plant is reopened, automotive accessories will be manufactured. All work being brought here represents an expansion of production facilities.

Pennsylvania

PITTSBURGH — David L. Wilkoff Co., 3012 Koppers building, has been organized here to engage in the iron and steel scrap trade. David L. Wilkoff, formerly with United Iron & Metal Co., is president.

PITTSBURGH—Freight car and motive equipment inquiries of the Bessemer & Lake Erie railroad and the Union Railroad Co., subsidiaries of the United States Steel Corp., call for a possible total expenditure of $14,000,000. The program calls for the construction of 1000 90-ton hopper cars, 1000 70-ton hopper cars, and 1000 70-ton mill type gondola cars, as well as 25 road and switching engines. Early placement of the order is expected.

PITTSBURGH — Organization of a large holding company to finance, design, construct, and fabricate homes was completed recently. The new concern, called the Arcy Corp., was incorporated in the office of Frank Gentsch, Marshall building, Cleveland, last summer, and is made up of five subsidiary firms. Tuscar Metals Inc., one of the subsidiaries, is operating former sheet and tin plate plants recently re-opened in New Philadelphia and Dover, O. In these two works the company will fabricate structural members for dwellings. President R. C. Cochrane says that an increase in the use of structural steel will be featured by the corporation.

UNIONTOWN, PA.—Goldberg Iron & Metal Co., this city, is making plans for a plant to cost $30,000 or more. Architect has not been appointed.

Alabama

BIRMINGHAM, ALA. — With a $6,000,000 loan from the government, this city is planning to start at once on an industrial water line, to be run from the small Warrior river, 25 miles north of the city. Four thousand tons of large size cast iron pipe, 2400 tons of steel plate, considerable reinforcing steel, and other products will be used in building a dam and the water route to the city.

BIRMINGHAM, ALA.—Swann & Co., recently organized with Theodore Swann, Birmingham building, president, has started construction of a laboratory building and chemical unit at Thirty-second street and Second avenue, for the manufacture of organic chemicals and other chemicals now imported. The company has also leased three units nearby for manufacturing purposes.

Maryland

BALTIMORE — Belvedere Hotel, Chase and Charles streets, contemplates installing new elevators, reconditioning the present elevators, and airconditioning the present building, at a cost of $250,000.

BALTIMORE—Armour & Co., Robert H. Cabell, president, 316 South LaSalle street, Chicago, plans improvements to its recently-acquired slaughtering and meat packing plant on Wilmarco avenue. L. A. Mellon is in charge of the local plant.

District of Columbia

WASHINGTON — Department of agriculture, division of purchase, sales and traffic, asks bids Jan. 24 for litter carrier tub, floor truck, and road roller; Jan. 21, for trucks, rotary feed water pump, and voltage regulator or stabilizer; Jan. 28, for leveling rods and tripods.

WASHINGTON — Commissioners, room 320, district building, will receive bids Jan. 22 for furnishing two 25,000,000-gallon daily capacity motor driven centrifugal pumping units.

WASHINGTON—Capital Transit Co. plans expending $2,727,000 for improvements to rail and bus service in 1936; program includes 35 additional buses, cost $259,600; establishment of bus garage, $350,000; track changes for re-routing, $967,000; to complete 1935 track renewal program, $188,000; to carry out 1936 track renewal program $600,000; street car improvements and other work, $717,000.

WASHINGTON — Marine corps, Brig. Gen. Hugh Matthews, quartermaster, asks bids Jan. 22 under schedule No. 447, for numbering machines; Jan. 21 under schedule No. 446, for cocks, oilers and gaskets; Jan. 21, schedule No. 450, for nuts and screws.

WASHINGTON — Panama canal, general purchasing officer, asks bids Jan. 28 under schedule No. 3119, for steel carriage and machine bolts, brass toggle bolts, brass and steel nuts, stove bolts, steel rivets, lock washers, and machine-bolt expansion shields, firebox steel plates and wrought iron pipe.

Kentucky

LEXINGTON, KY.—Kentucky Independent Packing Co. has completed negotiations for the purchase of Munn Bros. former plant on the old Frankfort pike, and will expend $100,000 on remodeling and modernization work.

Florida

DAYTONA BEACH, FLA.—Ramsey Bros. Co. has been incorporated to manufacture electrical appliances, by L. G. and H. S. Ramsey.

PLAINS, FLA.—Seaboard Air Line railroad, Charlotte and Granby streets, Norfolk, Va., is planning railroad extensions from this city to Lake Istokpoga, to cost in excess of $40,000.

TAMPA, FLA.—City is planning the construction of a seawall for yacht basin, first link in the renewal of the wood retaining wall on the channel side of Davis Islands. Project includes the use of about $15,000 worth of sheet steel piling in constructing temporary cofferdams, in which sections of the new wall will be built.

Georgia

MELDRIM, GA.—Union Bag & Paper Corp., Woolworth building, New York, has acquired approximately 2000 acres in Effingham county about 18 miles from Savannah, Ga. The company has under construction a $4,500,000 plant for the manufacture of paper.

Louisiana

LAKE CHARLES, LA.—Continental Oil Co., Oklahoma City, Okla., is receiving bids for the construction of a new terminal on Calcasieu river below Lake Charles, and a pipeline connecting new facilities with the Tepetate field in Acadia Parish. Cost of project is approximately $350,000. Terminals will include a 500 foot dock, two 80,000-barrel and one 10,000 barrel oil storage tanks, and the pipeline will be of 6-inch welded pipe 50 feet long. It is also reported that the company is considering the construction of a natural gasoline plant in the Tepetate field.

NEW ORLEANS, LA.—Johns-Manville Co., 22 East Fortieth street, New York, manufacturer of asphalt roofing, cement and rigid shingles, advises that engineering work governing construction of its new plant here will be done by company's engineering department. No contract has been let for machinery, however.

SHREVEPORT, LA.—Louisiana Oil Refining Corp. is reported to be expending $350,000 for repairs to its plant in this city, for the refining of Rodessa crude oil.

Mississippi

COLUMBUS, MISS.—Columbus Casket Co. is remodeling the old Tombigbee Cotton Mills building for a casket plant.

North Carolina

HIGH POINT, N. C.—Hedgecock Lumber Co. has been incorporated by D. S. Hedgecock and Paul Hamilton.

MARION, N. C.—State highway and public works commission, Raleigh, N. C., has acquired a limestone deposit near this city, and plans manufacturing road materials and agricultural lime. C. M. Waynick is chairman.

WILSON, N. C.—Hackney Wagon Co., recently reorganized and incorporated by T. J. Hackney, is modernizing

(*Please turn to Page 70*)

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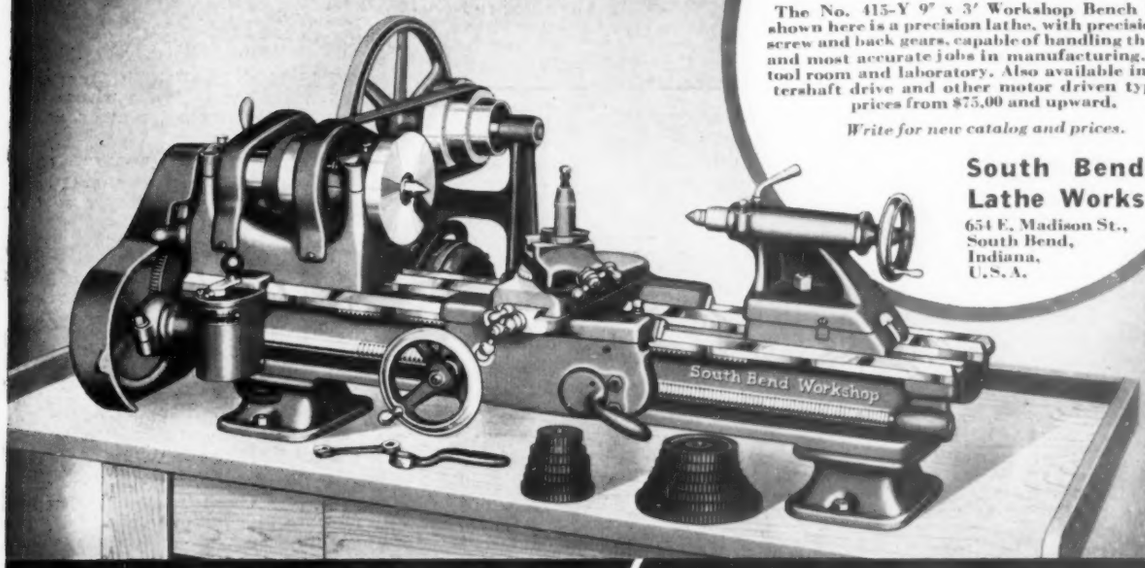

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(*Concluded from page* 68)

its plant to more efficiently take care of a production of 12,000 wagons per year. Reassembly of machinery and equipment for storage houses, rim-bending plant, blacksmith shops, wheel and spoke rooms, etc. is under way.

Tennessee

CHATTANOOGA, TENN. — United States Pipe & Foundry Co. is establishing a $750,000 foundry here.

MEMPHIS, TENN.—United States engineer, box 97, asks bids Jan. 30 under invoice 1092-36-178, for carbon steel castings which include suction Y, discharge Y, discharge nozzle, discharge elbow, and suction pipe hull casting.

TULLAHOMA, TENN. — American Timer Corp. has been incorporated by G. S. Lannon Jr. and C. R. Gaines, for the manufacture of electric clocks for ovens, etc.

West Virginia

ALLOY, W. VA.—Electric Metallurgical Co., 30 East Forty-second street, New York, will construct a furnace and packing building.

BLUEFIELD, W. VA. — Oakwood Smokeless Coal Co., W. W. Wood president, will develop coal at the mouth of Garden creek on Levisa river. Initial capacity is 2000 tons daily. Will let contract at once for constructing tipple, store, miner homes, and necessary buildings.

Virginia

ESSERVILLE, VA.—McCorkle Lumber Co. of Johnson City, Tenn., has the right of way for a narrow gage railroad to be built from near this city on the Interstate railroad to Critical Fork of the Guest river, where the company has a tract of timber, which will be shipped to Stonega, Va.

RICHMOND, VA.—Cavalier Distributing Corp. will erect a bottling plant at 2100 Westwood avenue, with a capacity of 3000 barrels daily. Cost is to be $40,000.

SALEM, VA.—Neuhoff Inc., 1803 Holliday street, Lynchburg, Va., has acquired a site located on the Catawba branch of Norfolk & Western railroad for the erection of a $100,000 packing plant. Plans for building will be completed soon.

Missouri

KANSAS CITY, MO.—General Truck Lines Inc. has been organized by Louis E. Middleton and W. M. Sabin, 5519 Garfield avenue.

ST. LOUIS—Mississippi Valley Equipment Co., 511 Locust street, wants a marine diesel engine, 275-300 horsepower, 300-500 r.p.m.; radial drills; 4-foot Symons cone crusher.

ST. LOUIS — Southern Equipment Co., 5017 South Twenty-eighth street, has acquired a tract adjoining its present building, and will use for expansion.

Arkansas

DERMOTT, ARK.—Dermott Stave Mill, V. R. Mull manager, will rebuild its burned main machine room.

Oklahoma

TULSA, OKLA.—Master Drilling Corp. has been incorporated by Harry Cannon and L. R. Page, Thompson building.

Texas

BUFFALO, TEX.—City is receiving bids for a waterworks, with a PWA allotment of $18,000 for well, pump house, and equipment, elevated tank and distribution system, at a cost of $32,000. Southwest Engineering Co., Littlefield building, Austin, Tex., is engineer.

DALLAS, TEX.—City plans expending $210,000 during 1936 for waterworks improvements; will construct several new filters for Bachman plant, enlarge and replace mains, etc.

DALLAS, TEX.—American Liberty Pipe Line Co., Dudley S. Golding, president, First National Bank building, will construct 200 miles of 8-inch welded pipeline. Contract to be let soon. In addition, three main line stations will be built between Rusk and Conroe, Tex., using centrifugal pumps and electric motors, at a cost of $1,250,000.

FORT WORTH, TEX. — Farmax Drilling Co. has been incorporated by I. McFarland and M. E. Conley.

GLADEWATER, TEX. — Solvex Pipeline Co. has been incorporated by John Baird and Noel Douglas.

HOUSTON, TEX.—Navigation district commissioners, J. Russell Wait secretary, asks bids Feb. 11 to be sent to port director, civil courts building, for castings, steel wire rope, and construction of a trestle.

HOUSTON, TEX.—Golden Gate Wine Co., S. Solomon vice president and general manager, headquarters at Atlanta, Ga., has leased space at 1107 Wood street on North San Jacinto avenue. Program calls for the establishment of a plant and the installation of $50,000 worth of equipment, including sterilizing, bottling, labeling and filtration, and boilers, etc.

HOUSTON, TEX.—R. E. Horlock, of Horlock Ice Industries, 902 Hogan street, this city, has acquired, will remodel, and operate La Porte ice manufacturing and distributing facilities owned by Houston Lighting & Power Co.

HOUSTON, TEX.—Houston Armature Works, 4 Preston avenue, is making plans for a factory, shop, and storage building, to cost $28,000 or more with equipment. Maturity is indefinite and architect has not been appointed.

TYLER, TEX.—Dewey T. Ross Engineering Corp. has been incorporated to do a general contracting business, by Henry P. and Dewey T. Ross.

TEXAS—Bureau of aeronautics, department of commerce, Washington, has approved construction of the following airports: Kell field at Wichita Falls, including hangar aprons, floor lighting system, hangar and shop repairs, administration building, moving old water tank, etc. Allotment of $64,457; San Antonio, including administration building, allotment of $77,000; Texarkana, including light installation and building, allotment of $33,000.

Wisconsin

MILWAUKEE — Darfalloy Co. has been incorporated to manufacture alloy metals developed by Thomas Daroszuk and Chester Fabisiak in association with William S. Smulski, 3441 South Fourteenth street, mechanical engineer.

JANESVILLE, WIS.—Ideal Tank & Boiler Works, formerly Kaskuke & Creek Welding Service, has moved into a new shop 80 x 250 feet at 959 South Jackson street, and is greatly enlarging its space for fabricating dairy tanks and general maintenance work. Oscar Rauch is manager.

Nebraska

OMAHA, NEBR.—City, H. Knudsen commissioner, city hall, is preparing for the construction and equipping of a brake testing station, to cost $50,000. WPA funds of $30,000 have been applied for.

Montana

COUTTS, MONT.—British American Oil Refineries has begun construction of two oil refineries and plans a third unit.

THOMPSON FALLS, MONT.—City has acquired the plant of the Gravit Water Co. and plans a new reservoir and larger distributing mains.

Pacific Coast

TULARE, CALIF.—Construction has been started on the first unit of a new trucking and warehouse terminal, to cost $20,000, for the Soultz Trucking & Material Co., on an 8-acre tract here.

CATHLAMET, WASH.—Willamette Paper Co. plans an extension to its cut up plant and will install a bandsaw unit and other equipment.

ELLENSBURG, WASH.—City officials have retained L. R. Stockman, city engineer of Baker, Oreg., to prepare preliminary plans for a sewage disposal plant and system, estimated to cost in excess of $150,000.

OMAK, WASH. — Omak Reduction Works Inc. has been organized by H. E. Roberts and associates.

OTTAWA, ONT. — Secretary of board of control soon takes bids on the Queen street pumping station project, calling for the replacement of 3 reciprocating pumps now obsolete, with 3 modern turbine driven centrifugal pumps. Program will require $60,000 and W. E. MacDonald, city hall, is engineer.

SEATTLE—City plans constructing an 18-hole golf course in West Seattle, including a water system, 14,000 feet of 4 to 6-inch cast iron pipe, and 8000 feet of 1¼ to 2-inch galvanized steel pipe. WPA funds have been allotted and entire project will cost $250,000. W. C. Hall Jr., Fourteenth and Battery streets, is park engineer.

SEATTLE—Paramount Mines Inc., 1337 Dexter Horton building, has been formed by C. H. Brooks and associates.

SEATTLE — Automatic Furnace Carburetor Co., W. C. Steele president, plans to open a plant at 4068 Rainier avenue for the manufacture of equipment to preheat air and fuel.

TACOMA, WASH.—An explosion of unknown origin blew part of the roof off the Waterside Milling Co. plant here recently and fire that followed destroyed the entire building.

Dominion of Canada

TORONTO, ONT.—Continental Can Co., New York, has purchased a 15-acre site in one of this city's industrial suburbs and will commence construction of a new Canadian plant, to cost approximately $500,000.

Foreign

STOKE-ON-TRENT, ENGLAND—British Aluminum Co. Ltd., Redmills road, is preparing plans for the construction of a new rolling mills plant, to cost $800,000.

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Anxious Buyers Clean Out Equipment at Auction

ABOUT 150 were present last Tuesday at the plant of the J. S. Mundy Hoisting Engine Co. in Newark, N. J., as the hoarse voice of the auctioneer yelled for bids on some 646 lot items of machinery and equipment (see p. 13). Up for sale were all sorts of units, ranging from a large double overarm plain miller, to miscellaneous supplies in the blacksmith shop.

Dealers, as might be expected, cornered most of the choice items, but it was evident from the bidding that there are many more buyers, with cash in hand, attending these distress sales than has been the case in past years. It was not so many years ago that an auctioneer who was shouting his loudest trying to clear machinery off the floor of the old Stearns motor plant in Cleveland grew so exasperated at the reticence of buyers and the scarcity of bids that he bundled up his books, shoved his platform into a corner and walked off in disgust.

But things are different now. Used machinery dealers are in "Heaven" these days when it takes four to six months to get a new lathe of standard design, and 6 to ten months for a milling machine. Auctioneers do not even have to shout any more; bids fly thick and fast, and the air is supercharged with knowing glances, cocked fingers and all the other skullduggery of veteran auction-attenders. Of course, with active bidding, prices were pushed to a little higher level, but still many bargains were snapped up.

There were a number of sales at the New Jersey auction made to user-buyers. Barnett Foundry & Machine Co., Irvington, N. J., was one. When the smoke had cleared away, it was found that practically everything up for sale had been tagged for some buyer.

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